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**ECONOMIC INTELLIGENCE REPORT**

**POST AND TELECOMMUNICATIONS SERVICES  
IN EAST GERMANY  
1950-57**



CIA/RR 139

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(ORR Project 46.1579)

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FOREWORD

This report is concerned with those post and telecommunications facilities and services in East Germany operated and controlled by the Ministry of Post and Telecommunications. Other ministries operate functional post and telecommunications systems such as those serving the armed forces, shipping, railroads, and industry. These independent post and telecommunications systems are not covered in this report. It must be pointed out, however, that although the facilities and services covered here are confined to those under the jurisdiction of the Ministry of Post and Telecommunications, their use is not so restricted. The armed forces make abundant use of this system, as do all the ministries. The functional microwave radio relay network of the Communist Party of East Germany (SED) also is covered in this report.



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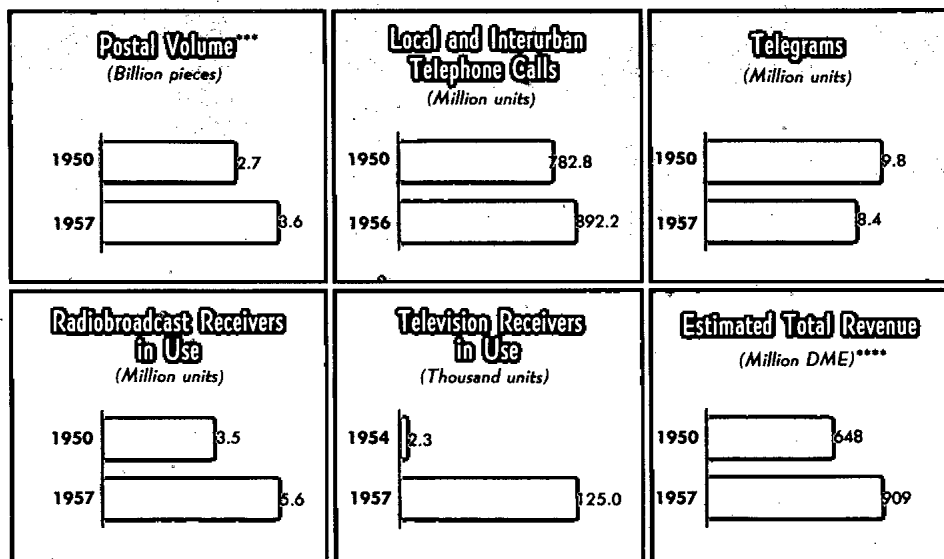
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POST AND TELECOMMUNICATIONS SERVICES  
IN EAST GERMANY\*  
1950-57

Summary

The public\*\* post and telecommunications system in East Germany, which provides postal, telephone, telegraph, radiobroadcasting, wire-diffusion, and television services, is managed by the Ministry of Post and Telecommunications. The government is the principal user of telephone and telegraph services in spite of the fact that certain government ministries, along with the armed forces, operate and control functional telecommunications facilities to meet specific needs. Telecommunications services are carried by integrated wireline, micro-wave radio relay, and point-to-point radio facilities.

The Ministry of Post and Telecommunications employed about 130,000 persons in 1957 and received a total revenue from its operations of about 900 million East German marks (DME). A summary of the growth in services, facilities, and revenues during 1950-57 follows.



\* The estimates and conclusions contained in this report represent the best judgment of ORR as of 1 April 1958.

\*\* The term public in this report refers to the facilities and services under the control of and operated by the Ministry of Post and Telecommunications. It does not refer to functional systems such as those serving the armed forces, the state police, or other ministries.

\*\*\* Such as letters, packages, and money orders.

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With the exception of the telegraph service, growth in volume has been steady but not rapid. Telegraph volume has been affected by the expansion of subscriber telegraph service (TELEX\*).

In spite of the application of automation techniques to the telecommunications system, substantial delays are encountered in the placement of telephone calls and in the transmission of telegrams. These delays are caused by insufficient local and interurban telephone exchange capacity, by inadequate capacity of interurban lines, and by the low technical level of personnel.

The status of broadcast service, an ideological control mechanism of the state in East Germany, is mixed. Amplitude modulated\*\* (AM) radiobroadcasting service is considered adequate, but frequency modulated (FM) radiobroadcasting service is limited. Future emphasis probably will be placed on the provision of additional FM facilities. Television broadcasting is confined to nine stations. Additional stations and increases in transmitting power of existing stations, along with an expansion of network television, are means to be used in improving the effectiveness of the television service.

Before 1953, East Germany was forced to export large quantities of telecommunications apparatus to the USSR. Since 1953, Soviet demands have lessened, and East Germany has made some progress in building, rebuilding, modernizing, and expanding its telecommunications resources. Manual operation is giving way to automatic operation in the telephone and telegraph network. Line capacities are being increased by apparatus for multiplying channels, and new lines of microwave radio relay facilities are being installed.

Future trends in this sector of the economy hinge largely on levels of investment and improvements in training. Increased labor productivity appears to be achievable through greater application of automation and mechanization along with reductions in labor turnover.

Given these opportunities, East Germany should be able to fulfill its current plans for rounding out the resources of this sector of the economy for governmental use. Little increase in availability of service for private consumers can be expected.

\*. TELEX is a term applied to a system of subscriber telegraph used in European countries. As East Germany has a subscriber telegraph network interconnected with this European network, the term TELEX is used in this report to describe the East German network.

\*\* See Appendix A, Glossary of Technical Terms.

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## I. Introduction.

The purpose of this report is to discuss the status, operation, and development of the public post and telecommunications facilities and services provided by the Ministry of Post and Telecommunications (Ministerium fuer Post- und Fernmeldewesen) in East Germany. Quantitative data are limited generally to the period 1950-57, but some qualitative references to historical aspects are included in the text. The only functional telecommunications system covered extensively in this report is that operated by the Socialist Unity (Communist) Party of East Germany (Sozialistische Einheitspartei Deutschlands -- SED). This system has been included because it was established to provide greater security than was available from the public telecommunications system and because it can be easily integrated with the public system.

## II. Ministry of Post and Telecommunications.

### A. Organization.

The primary responsibilities of the Ministry of Post and Telecommunications in East Germany are to provide domestic and international telephone and telegraph services through an integrated wireline and radio network, a domestic and international broadcast network utilizing radio and television facilities, and a domestic and international postal service which also provides domestic postal checking and savings services. In addition, the Ministry is responsible for establishing technical regulations for post and telecommunications networks operated by other government ministries and agencies. 1/\* All facilities are owned by the state.

The German post and telecommunications organization which existed before World War II was retained in the Soviet Zone of Germany and was named the Central Post and Telecommunications Administration. This administration was a semiautonomous organization with subdivisions corresponding approximately to the traditional German states (Laender) of Saxony, Thuringia, Sachsen-Anhalt, Brandenburg, and Mecklenburg. In February 1948 the Soviet authorities formed a central East German authority called the German Economic Commission. Shortly afterward the Central Post and Telecommunications Administration for Post and Telegraph was designated the Department of Post and Communications of the new authority. Then, in October 1949, when the German Democratic Republic (GDR) of East Germany came into being, the Central Post and Telecommunications Administration was redesignated the Ministry of Post and Telecommunications. One other major change in the organization of the Ministry occurred in 1952, when the former

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postal states were reorganized into 14 districts (Bezirke) to conform to the new territorial reorganization of the governmental administration of East Germany. 2/ About the same time, the Ministry was given the responsibility for the production of all radio, telecommunications, and electronic equipment. This responsibility for production was poorly executed and in June 1953 was transferred to the Ministry of Machine Construction. 3/

Also in 1952 the State Radio Committee was established to supply programs and schedules for all radio and television broadcasting stations and networks of East Germany. The Committee virtually occupies the status of a ministry, as it is directly subordinate to the Council of Ministers. 4/

The present organization of the Ministry of Post and Telecommunications is shown in Figure 1.\* The headquarters of the Ministry is located in East Berlin.

Friedrich Burmeister has been Minister of Post and Telecommunications in East Germany since December 1949. Although he is the nominal head of the Ministry, the actual authority for major decisions is shared by him with several of the chief administrators. The chief administrators comprise a top policy group, called the Commission of the Ministry. 5/ Provision for this kind of arrangement was authorized by the Council of Ministers in July 1952, but it is believed that, because the Minister is not himself a member of the Party, the Commission of the Ministry of Post and Telecommunications exercises much more authority than that originally intended by the Council of Ministers. 6/ The Minister, Burmeister, is a high-ranking member of the Christian Democratic Party of East Germany (CDU). Thus the sharing of ministerial authority between the Minister and the Commission of the Ministry serves as a control mechanism for the Party to make sure that its policies are carried out.

The Minister is assisted by several staffs (Central Departments) and three deputy ministers. The first deputy minister is Richard Serinek, a Party member, who primarily assists the Minister in administrative matters. The other two deputy ministers, Kurt Gebhardt and Gerhard Probst, both Party members, have operational responsibility for the post and telecommunications and the radio and television functions of the Ministry, respectively. 7/

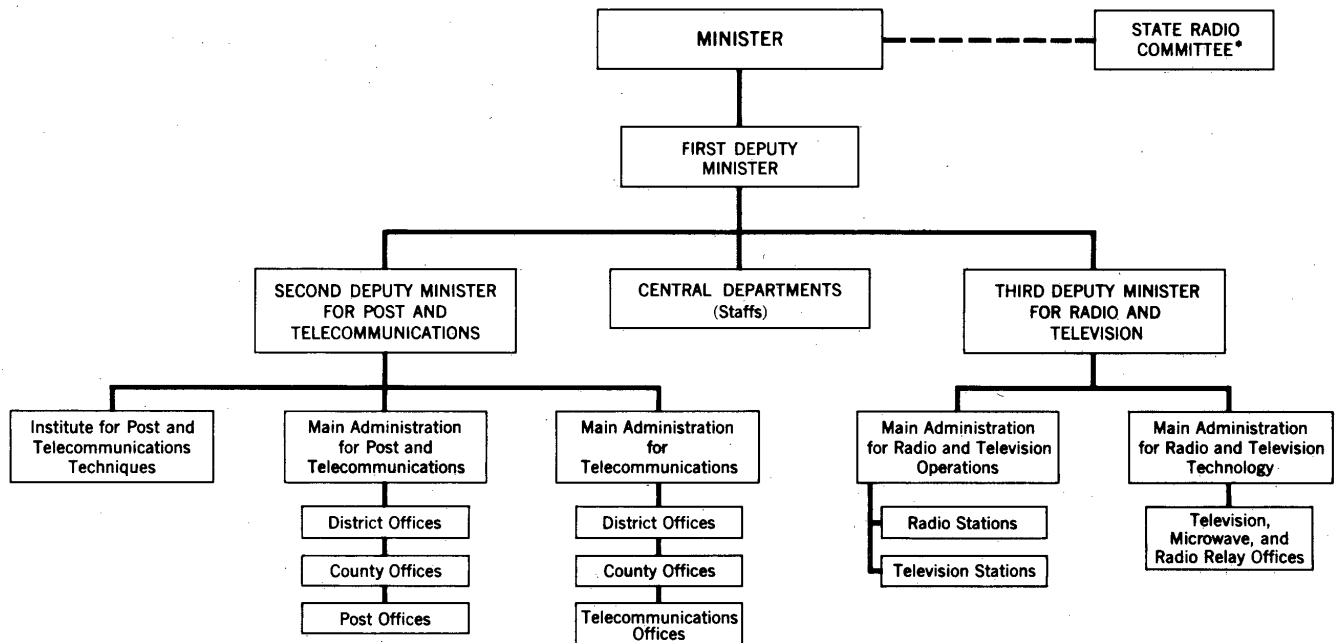
Operations of the Ministry of Post and Telecommunications are controlled through four main administrations. Field units of the Main Administration for Post and Telecommunications and the Main

\* Following p. 4.

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**EAST GERMANY**  
**ORGANIZATION OF THE MINISTRY**  
**OF POST AND TELECOMMUNICATIONS**  
1957

Figure 1



\*The State Radio Committee furnishes the programs and schedules for all radio and television broadcasts and thus works with several components of the Ministry of Post and Telecommunications in the transmission and relay of these programs.

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Administration for Telecommunications are generally broken down by districts and counties corresponding to the political divisions of the country. There are, however, some functions which are organized in larger units, such as telecommunications construction, which is divided into six areas. The field units of the Main Administrations for Radio and Television Operations and for Radio and Television Technology consist of stations for radio and television broadcasting and for television microwave radio relay, respectively.

Research and development within the Ministry is conducted in the Institute for Post and Telecommunications and in the Main Administration for Radio and Television Technology. Before the establishment of the Main Administration for Radio and Television Technology in April 1956, all research and development work was centralized in the Institute for Post and Telecommunications. The division of responsibility was brought about in order to improve work in the field of radio and television technology. 8/

The State Radio Committee in its function as supplier of all radio and television programs and broadcast schedules works closely with three of the main administrations of the Ministry of Post and Telecommunications. The Main Administration for Telecommunications insures that wireline facilities are available for relaying broadcast programs from the State Radio Committee headquarters in East Berlin to the radiobroadcasting stations throughout the country. The Main Administration for Radio and Television Technology has the same function with respect to the relay of television programs from the State Radio Committee headquarters in East Berlin to the television broadcasting stations throughout East Germany. Radio and television station personnel and logistics are provided by the Main Administration for Radio and Television Operations. The organization of the State Radio Committee is shown in Figure 2.\*

The organization of the Ministry appears to be consistent with its basic function of providing post and telecommunications services. In the past, organizational problems have arisen primarily in broadcasting services because of the dual authority exercised by the Ministry and the State Radio Committee. Although the relationship between the Ministry and the State Radio Committee was not changed in the reorganization of April 1956, all broadcasting functions were brought together under the authority of a deputy minister, a move which should provide for better coordination between the two organizations.

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\* Following p. 6.

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The contemplated reorganization of the economy of East Germany, if carried out, probably will not affect the organization of the Ministry of Post and Telecommunications. The present organization is sufficiently flexible to adapt to shifts in telecommunications service away from a centralized pattern leading toward East Berlin to a decentralized arrangement between district and industrial centers.

B. Revenue.

The total revenue of the Ministry of Post and Telecommunications in East Germany is estimated to have risen from 648 million East German marks (Deutsche Mark East -- DME\*) in 1950 to 909 million DME in 1957, an increase of approximately 40 percent. Table 1\*\* shows the estimated total annual revenue for 1950-57. Plan information for 1954 is available, thus permitting the estimation of revenues from post and telecommunications. 9/ The postal share was 411 million DME, and the telecommunications share was 323 million DME. This information was used to derive the post and telecommunications revenues shown in Table 1.

Compared with the economy of East Germany as a whole for this period of time, the post and telecommunications sector (represented by the Ministry of Post and Telecommunications) was lagging substantially. Table 2\*\*\* shows a comparison of the growth of the entire economy with that of the post and telecommunications sector. The substantial difference in growth is probably attributable to general conditions prevailing in the economy in 1950 compared with those in the post and telecommunications sector in 1950. The economy was in a generally depressed condition which left many resources not fully utilized. In consequence, a large increase in gross national product could be realized without net new investment by utilizing these idle resources. 10/ The post and telecommunications sector in 1950 was fully utilizing plant and facilities, however, so that any new increases in total revenue would have to come about principally through new investment. Because investment did not reach substantial proportions before 1952 (see Table 3\*\*\*\*), the post and telecommunications sector could not match the rate of increase of the entire economy during the first few years after 1950.

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\* Unless otherwise indicated, all DME values in this report are given in terms of current DME's, which may be converted to US dollars at the appropriate official rate of exchange for each year given. These rates of exchange, however, do not necessarily reflect the true dollar value.

\*\* Table 1 follows on p. 7.

\*\*\* Table 2 follows on p. 8.

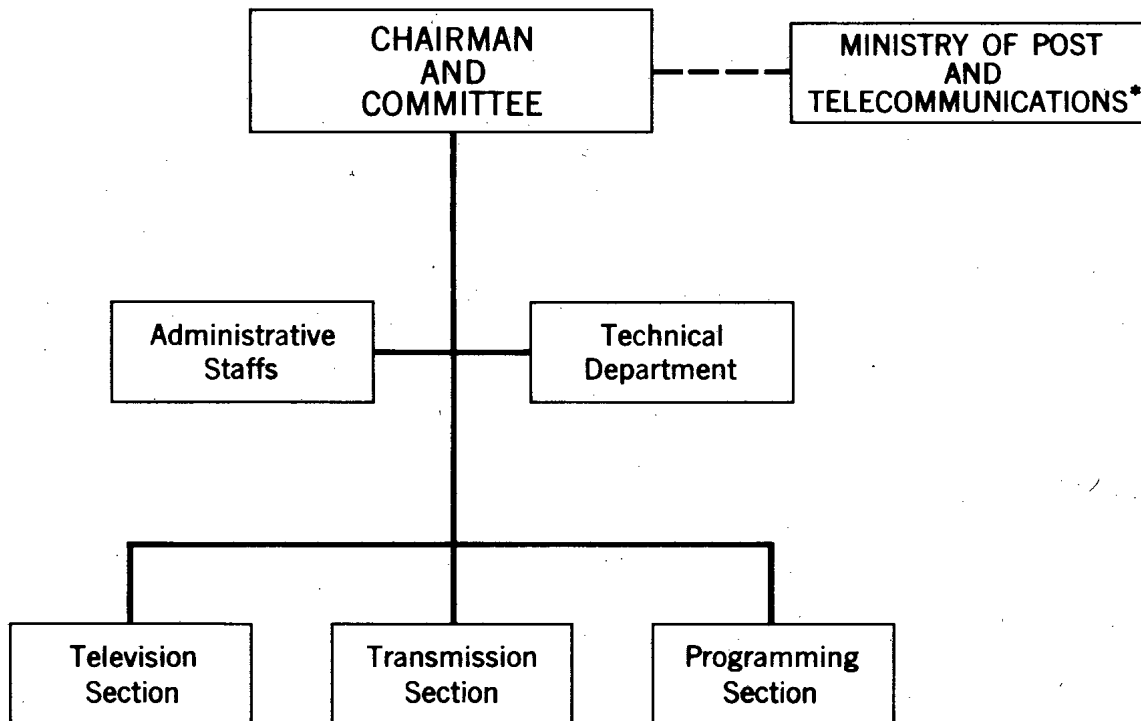
\*\*\*\* P. 11, below.



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Figure 2.

**EAST GERMANY**  
**ORGANIZATION OF THE STATE RADIO COMMITTEE**  
**1957**



*\*The Ministry of Post and Telecommunications provides the facilities for the transmission and relay of the programs of the State Radio Committee.*

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Table 1

Estimated Total Revenue of the Ministry of Post and Telecommunications  
in East Germany  
1950-57

	Million Current DME							
	1950	1951	1952	1953	1954	1955	1956	1957
Postal services <u>a/</u>	363	382	400	440	411	458	486	509
Telecommunications services <u>a/</u>	285	300	315	345	323	360	381	400
Total	<u>648</u> <u>b/</u>	<u>682</u> <u>c/</u>	<u>715</u> <u>d/</u>	<u>785</u> <u>d/</u>	<u>734</u> <u>e/</u>	<u>818</u> <u>f/</u>	<u>867</u> <u>f/</u>	<u>909</u> <u>g/</u>

a. Derived from the planned shares for 1954: postal services were to be 56 percent of total revenue, and telecommunications services were to be 44 percent. 11/

b. 12/

c. Interpolated, using arithmetic progression, between 1950 and 1952.

d. Plan. 13/

e. Plan. 14/

f. 15/

g. 16/

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Table 2

Indexes of Gross Revenue of the National Economy  
and the Post and Telecommunications Sector  
in East Germany  
1950-57

1950 = 100

	<u>1950</u>	<u>1951</u>	<u>1952</u>	<u>1953</u>	<u>1954</u>	<u>1955</u>	<u>1956</u>	<u>1957</u>
National economy <u>a/</u>	100	114	121	130	142	150	163 <u>b/</u>	N.A.
Post and telecom- munications sector <u>c/</u>	100	105	110	121	113	126	134	140

a. 17/b. 18/

c. Index derived from Table 1, p. 7, above.

The average annual rate of increase in revenue for the post and telecommunications sector of the economy for 1950-57 was slightly less than 5 percent. The drop in total revenue in 1954 was caused largely by a reduction in postal rates on 1 October 1954. 19/

The large increase in total revenue in 1955, in spite of the reductions in 1954, resulted from the inclusion of revenues of East Berlin with those of the Ministry of Post and Telecommunications. Before 1955, East Berlin was under Soviet administration and was not included in the total revenue of the Ministry. With the transfer in 1955 of the responsibility for post and telecommunications in East Berlin to the Ministry of Post and Telecommunications, the total revenue of the post and telecommunications sector of the economy is represented by the total revenue of the Ministry. In 1956 the revenue from post and telecommunications services in East Berlin represented 12 percent of the total. 20/

A measure of the profitability of the Ministry of Post and Telecommunications for 1952 and 1953 is shown in the following relatively complete accounting breakdown 21/:

## S-E-C-R-E-T

Million Current DME		
	<u>1952</u>	<u>1953</u>
Production expenditure		
Overhead	60	48
Depreciation	53	52
Production wages	169	239
Overhead salaries	117	69
Other costs	79	125
Subtotal	<u>477</u>	<u>533</u>
Net revenue	<u>238</u>	<u>252</u>
Net profit	<u>222</u>	<u>279</u>
Total	<u>715</u>	<u>785</u>

The relationship between net profit and net revenue cannot be explained. The differences, however, are believed to involve some peculiar practice for balancing accounts between the state budget and the Ministry budget.

For 1955 and 1956, information is available for a breakdown of total revenue and expenditures as follows 22/:

Million Current DME		
	<u>1955</u>	<u>1956</u>
Average total expenditure		
Depreciation	61	65
Material	86	89
Wages and salaries	408	435
Subtotal	<u>555</u>	<u>589</u>
Net revenue	<u>263</u>	<u>278</u>
Total	<u>818</u>	<u>867</u>

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In addition, there are reports that the Ministry of Post and Telecommunications incurred a deficit of 18 million DME between 1 October 1956 and 31 March 1957. 23/ If these reports are true, total expenditure is much greater than official East German figures indicate.

New monetary exchange rates for noncommercial transactions, which were proclaimed in 1957, caused a reduction in revenue from international post and telecommunications services. Because the Ministry of Post and Telecommunications cannot change its international rates without the approval of the Universal Postal Union, the Ministry of Finance is to compensate the Ministry of Post and Telecommunications for the loss in revenue on an annual basis. The establishment of an annual subsidy may indicate that the Ministry of Post and Telecommunications does not intend for the present to ask for an increase in international rates. 24/

The trend of revenue for the Ministry of Post and Telecommunications for 1950-57 shows a gradually declining annual rate of increase. Because post and telecommunications services available to the government and to industry are generally adequate, there are likely to be only minor increases in service and thus only minor increases in post and telecommunications revenue. The revenue probably will continue to increase in the future but at a decreasing rate.

C. Investment.

Investment in the post and telecommunications sector in East Germany is planned and developed by the Ministry of Post and Telecommunications and the State Planning Commission. At the beginning of a plan period a general outline is prepared by the State Planning Commission, which attempts to set the parameters within which the Ministry of Post and Telecommunications must plan its investments. The Ministry then formulates a detailed plan for the coming year and submits it to the State Planning Commission, where contradictory points are settled between the Ministry and the Commission. The plans are subject to change, however, in relation to the availability of materials and the priorities of other segments of the economy. 25/

Investment in the post and telecommunications sector of the economy for 1950-57 is shown in Table 3.\* The Ministry of Post and Telecommunications invested the entire amount for this sector during 1955-57.

Investment increased substantially from 1950 to 1953. This trend probably reflected the increasing supply of telecommunications

\* Table 3 follows on p. 11.

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Table 3

Estimated Investment of the Ministry of Post and Telecommunications  
in East Germany <sup>a/</sup>  
1950-57

	Million Current DME							
	<u>1950</u>	<u>1951</u>	<u>1952</u>	<u>1953</u>	<u>1954</u>	<u>1955</u>	<u>1956</u>	<u>1957</u>
Telecommunications	16 <sup>b/</sup>	27 <sup>b/</sup>	36 <sup>b/</sup>	51 <sup>c/</sup>	38 <sup>d/</sup>	41 <sup>e/</sup>	72 <sup>f/</sup>	75 <sup>g/</sup>
Post <sup>h/</sup>	5	10	14	11	22	16	27	29
Radio <sup>i/</sup>	6	9	12	16	15	14	25	26
Total	<u>27 <sup>j/</sup></u>	<u>46 <sup>k/</sup></u>	<u>62 <sup>l/</sup></u>	<u>78 <sup>m/</sup></u>	<u>75 <sup>n/</sup></u>	<u>71 <sup>o/</sup></u>	<u>124 <sup>o/</sup></u>	<u>130 <sup>o/</sup></u>

a. Totals are derived from unrounded data and may not agree with the rounded data shown. During 1950-54, post and telecommunications investment for East Berlin was administered by the Postal Directorate of the East Berlin Magistracy and thus does not appear in this table for the Ministry of Post and Telecommunications.

b. Derived, assuming telecommunications investment to be 57.9 percent of total investment (see footnote o, below).

c. 26/

d. 27/

e. 28/

f. 29/

g. 30/

h. Derived by subtracting telecommunications and radio investment from total investment.

i. Derived, assuming radio investment to be 20 percent of total investment. 31/

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Table 3

Estimated Investment of the Ministry of Post and Telecommunications  
in East Germany a/  
1950-57  
(Continued)

---

j. 32/

k. 33/. Investment in 1951 is reported to have equaled 168 percent of investment in 1950.

l. Interpolated between 1951 and 1953, using arithmetic progression.

m. Plan. 34/

n. Plan. 35/

o. Derived from the relationship between total investment for the Ministry of Post and Telecommunications and the investment for the Main Administration for Telecommunications in 1953 and 1954. The Main Administration had 65.6 percent of total investment in 1953 and 50.2 percent in 1954. The average percent for these years, 57.9 percent, was used to estimate total investment for the Ministry in 1955-57.

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equipment available for domestic use. Demand for telecommunications equipment had existed since the end of World War II, but the turmoil of reorganization in the equipment industry and the huge demands for exports by the USSR left only small quantities of equipment available for use by the Ministry of Post and Telecommunications. Investment funds of the Ministry for those years included funds for telecommunications facilities of the Party, the Ministry of State Security, the Soviet Control Commission, and Soviet military forces. 36/

Investment funds available for the Ministry of Post and Telecommunications declined in 1954 and 1955, probably as a result of the general decline of total East German investment. The percentage reduction of total investment, however, was greater than that for the Ministry of Post and Telecommunications. Also, in 1954 it became possible for smaller units within the Ministry to use portions of their own funds for minor investments which are not reported in the planned investment of the Ministry.

In 1956 a decision was made during the Third Party Conference of the Communist Party to replace all manual telephone exchanges with automatic exchanges by 1960. In order to comply with this decision, the Main Administration for Telecommunications, which was the component in the Ministry of Post and Telecommunications affected by this Party decision, submitted to the State Planning Commission an estimate for planned investment including the cost of the new project. The Commission then revised the planned investment of the Main Administration. The two sets of planned figures for telecommunications are as follows 37/:

	<u>Million Current DME</u>				
	<u>1956</u>	<u>1957</u>	<u>1958</u>	<u>1959</u>	<u>1960</u>
Main Administration for Telecommunications	68.0	141.5	200.0	227.0	253.5
State Planning Commission	68.0	80.0	79.5	107.4	133.0

A comparison of the planned investment of the State Planning Commission for 1956 and 1957 with the estimated investment given in Table 3\* shows reasonably close agreement. The difference of a few million DME between planned investment and estimated investment is not unusual for investment in the Main Administration for Telecommunications. For instance, in 1957 a difference of 4 million DME existed because the USSR blocked the purchase of carrier-frequency

\* P. 11, above.



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telephone cable needed by the Main Administration for Telecommunications. 38/ The cable was, instead, exported to the USSR on a first-priority basis. 39/

In addition to investments for East German use, the Ministry of Post and Telecommunications also makes telecommunications investments for the military forces of the USSR stationed in East Germany. Although these investments were much greater before 1953, there is information indicating that the procedure continued into 1957. 40/ The amount of investment for facilities of the Soviet army is not carried as a separate account but probably is prorated between the district offices in which the investment is made and the appropriate construction offices of the Ministry of Post and Telecommunications.

The investment in telecommunications facilities by districts is shown in Table 4\* for 1954, 1955, and 1957. The amounts of investment in individual districts vary considerably, but the composite trend shows a gradual rise.

On 1 March 1954 the Postal Directorate of East Berlin was transferred to the Ministry of Post and Telecommunications of East Germany. 41/ Before that time, East Berlin was under Soviet administration, although its investments were coordinated through the State Planning Commission of East Germany. Planned investment under the Soviet administration for post and telecommunications in East Berlin was as follows 42/:

<u>Million Current DME</u>				
<u>1951</u>	<u>1952</u>	<u>1953</u>	<u>1954</u>	<u>1955</u>
13	14	15	10	10

For 1956 and 1957, only telecommunications investment in East Berlin is available. This information is shown in Table 4 along with district investments of the Ministry of Post and Telecommunications.

In the near future the trend of investment in the post and telecommunications sector of the economy is expected to rise. The conversion from manual to automatic telephone exchanges, which is planned, will require the largest portion of additions to investment. The continued development of microwave radio relay, TELEX, and television networks also will require substantial amounts of investment funds.

\* Table 4 follows on p. 15.

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Table 4

Estimated Investment in Telecommunications  
of the Ministry of Post and Telecommunications  
in East Germany, by District a/  
1954-55 and 1957

District	Million Current DME		
	1954 <u>b/</u>	1955 <u>c/</u>	1957 <u>d/</u>
Rostock	1.6	1.9	2.3
Schwerin	0.8	1.4	2.0
Neubrandenburg	1.7	2.6	1.9
Potsdam	2.7	2.1	2.7
Frankfurt an der Oder	1.6	2.0	2.8
Cottbus	1.3	1.4	3.4
Magdeburg	1.6	1.7	3.0
Halle	2.0	1.0	3.8
Erfurt	1.4	1.0	1.9
Gera	2.0	1.2	3.1
Suhl	2.2	1.2	1.6
Dresden	3.1	1.4	3.3
Leipzig	2.7	4.6	5.7
Karl-Marx-Stadt (Chemnitz)	2.1	1.1	2.8
East Berlin	N.A.	4.4	4.0
Total	<u>26.9</u>	<u>29.1</u>	<u>44.3</u>

a. Totals are derived from unrounded data and may not agree with the sum of their rounded components. Figures in this table do not agree with those in Table 3, because investments for interurban telecommunications circuits and other miscellaneous investments are organized on a national basis, independent of the district administrations.

b. 43/  
c. 44/  
d. 45/

D. Manpower.1. Labor Force.

The Ministry of Post and Telecommunications in East Germany employed approximately 130,000 persons in 1957. This figure represents

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a 34-percent increase in personnel above the figure of approximately 96,000 employed in 1950. The annual change in personnel since 1950, shown in Table 5,\* has not been consistent. The years 1951, 1952, and 1954 showed substantial increases, whereas 1953 showed a decline, and 1955, 1956, and 1957 showed rather moderate increases.

Numerous serious attempts were made in 1957 to effect reduction in the number of employees, ranging from 30 to 5 percent. 46/ The reaction by employees to these attempts was so violent, however, that the effort was postponed indefinitely, and 1957 showed a growth in personnel in excess of the previous 2 years. It is believed that this upward trend in employment of the Ministry of Post and Telecommunications will continue and that no additional attempts to reduce employment will occur in the near future.

As can be observed from the data in Table 5, the percentage of women employed in the Ministry has increased from 40 percent of the total in 1950 to 56 percent of the total in 1957. A major factor contributing to this trend is the decline of employable males brought about by war losses and by defections to the West of large segments of the East German population. The resulting decline in the number of employable males in East Germany has necessitated the hiring of females. It is believed that the rising percentage of women in the labor force has not impaired the efficiency or effectiveness of the Ministry, as many of the jobs can be performed equally well by members of either sex.

The average number of employees of the Ministry in East Germany, by districts, in 1952-56 is shown in Table 6.\*\* Although the fluctuations in employment levels within districts cannot readily be explained, the differences may be caused by continual shifting of the construction teams among the districts.

The inclusion of East Berlin as a district of the Ministry of Post and Telecommunications reflects the integration of the Soviet Sector of Berlin into the post and telecommunications sector of the East German economy. In terms of the number of employees, East Berlin is the largest district in East Germany -- a fact which reflects its strategic significance. It is reasonable to assume that the quality of the labor force in East Berlin also is superior to that of all other districts.

\* Table 5 follows on p. 17.

\*\* Table 6 follows on p. 18.

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Table 5

Estimated Average Annual Number of Employees of the Ministry of Post and Telecommunications  
in East Germany, by Sex and by Type a/  
1950-57

Year	Distribution by Sex				Distribution by Type				Total Employees (Thousand)
	Men		Women		Regular Employees		Apprentices		
	Number (Thousand)	Percent of Total Employees	Number (Thousand)	Percent of Total Employees	Number (Thousand)	Percent of Total Employees	Number (Thousand)	Percent of Total Employees	
1950	57 <u>b/</u>	60	38 <u>b/</u>	40	93 <u>c/</u>	97.1	3 <u>c/</u>	2.9	96 <u>d/</u>
1951	61 <u>b/</u>	60	41 <u>b/</u>	40	98 <u>c/</u>	96.7	3 <u>c/</u>	3.3	101 <u>d/</u>
1952	57 <u>b/</u>	51	55 <u>b/</u>	49	108 <u>c/</u>	96.5	4 <u>c/</u>	3.5	112 <u>d/</u>
1953	54 <u>b/</u>	49	56 <u>b/</u>	51	106 <u>c/</u>	96.5	4 <u>c/</u>	3.5	110 <u>d/</u>
1954	54 <u>b/</u>	45	67 <u>b/</u>	55	118 <u>c/</u>	96.6	4 <u>c/</u>	3.4	122 <u>d/</u>
1955	55 <u>b/</u>	44	68 <u>b/</u>	56	119 <u>c/</u>	96.5	4 <u>c/</u>	3.5	123 <u>d/</u>
1956	56 <u>b/</u>	44	70 <u>b/</u>	56	121 <u>c/</u>	96.5	4 <u>c/</u>	3.5	126 <u>d/</u>
1957	57	44 <u>e/</u>	72	56 <u>e/</u>	125	96.5 <u>f/</u>	5 <u>e/</u>	3.5 <u>f/</u>	129 <u>g/</u>

a. The data presented in this table represent yearly averages. As the number of employees has increased each year, the yearly averages would probably approximate midyear figures. Totals are derived from unrounded data and may not agree with the sum of their rounded components.

b. 47/

c. 48/

d. 49/

e. The ratio of men to women in 1957 was assumed to be the same as that in 1956.

f. The ratio of regular employees to apprentices in 1957 was assumed to be the same as that in 1956.

g. 50/

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Table 6

Estimated Average Number of Employees  
of the Ministry of Post and Telecommunications  
in East Germany, by District a/  
1952-56

District	Thousand Units				
	1952 <u>b/</u>	1953 <u>b/</u>	1954 <u>b/</u>	1955 <u>b/</u>	1956 <u>c/</u>
Rostock	4.6	2.4	4.9	5.1	5.3
Schwerin	4.4	3.3	4.8	4.7	4.8
Neubrandenburg	3.0	2.9	3.9	3.9	4.0
Potsdam	6.1	6.2	7.2	7.3	7.6
Frankfurt an der Oder	3.0	2.9	3.7	3.8	3.8
Cottbus	3.0	3.0	4.1	4.1	4.3
Magdeburg	8.6	8.0	10.0	10.2	10.2
Halle	11.0	8.3	11.1	11.0	10.8
Erfurt	9.8	10.2	9.0	8.9	9.4
Gera	4.0	3.4	4.4	4.3	4.0
Suhl	2.2	2.4	2.9	3.0	3.1
Dresden	12.2	14.6	13.4	13.5	14.1
Leipzig	11.5	9.5	13.2	13.5	13.8
Karl-Marx-Stadt (Chemnitz)	12.0	10.6	13.3	13.2	13.2
East Berlin	16.6	22.5	15.8	16.4	17.2
Total	<u>111.9</u>	<u>110.1</u>	<u>121.7</u>	<u>122.7</u>	<u>125.5</u>

a. Totals are derived from unrounded data and may not agree with the sum of their rounded components.

b. 51/

c. 52/

## 2. Wages.

The average wage level of post and telecommunications employees in East Germany, as shown in Table 7,\* is lower than the average wage level prevailing in other sectors of the economy. For example, in 1950 the average wage of employees in the major economic sectors in East Germany was 3,072 DME per year, whereas the average wage of regular post and telecommunications employees (excluding apprentices) was only 2,988 DME per year. 53/ Similarly, in 1955 the general average wage of these employees was 4,248 DME per year, whereas the average

\* Table 7 follows on p. 19.

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Table 7

Estimated Total Annual Wage Bill and Average Annual Wages of Employees  
of the Ministry of Post and Telecommunications  
in East Germany  
1950-57

	1950	1951	1952	1953	1954	1955	1956	1957
Total annual wage bill (Million current DME)	280 <u>a/</u>	304 <u>a/</u>	336 <u>a/</u>	341 <u>a/</u>	393 <u>a/</u>	408 <u>a/</u>	435 <u>a/</u>	467 <u>b/</u>
Average annual wage (Current DME)								
All employees <u>c/</u>	2,927	2,997	3,002	3,102	3,229	3,326	3,464	3,607
Regular employees	2,988 <u>d/</u>	3,072 <u>d/</u>	3,072 <u>d/</u>	3,180 <u>d/</u>	3,312 <u>d/</u>	3,420 <u>d/</u>	3,564 <u>d/</u>	3,711 <u>e/</u>
Apprentices <u>f/</u>	896	922	922	954	994	1,026	1,069	1,113

a. 54/b. 55/

c. Derived by dividing total wage bill by total employees.

d. 56/

e. Assuming the same percentage relation between wages of all employees and of regular employees in 1957 as in 1956.

f. The average annual wage of apprentices was assumed to be 30 percent of the average annual wage of regular employees of the Ministry of Post and Telecommunications.

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wage of post and telecommunications employees was 3,420 DME per year. 57/ Although wages of this group of post and telecommunications employees have increased since 1950, they have lagged behind increases in the general wage level. Thus post and telecommunications wages in 1950 were only 2.7 percent lower than the general wage level, but by 1955 they were 19.5 percent lower. This lag probably reflects the increasing percentage of women employed in this sector of the economy. Although women are reportedly paid the same wage as men for performing the same work, they generally work in jobs requiring less skill and training and hence fall into lower wage categories.

There are substantial variations in wage levels for different classifications of employees engaged in the post and telecommunications sector. In 1954, for example, monthly wages in a Potsdam radio relay station were as follows 58/:

<u>Job Title</u>	<u>Monthly Wage (Current DME)</u>
Superintendent	1,500
Deputy superintendent	1,200
Bookkeepers	500 to 600
Engineers	850
Radio operators	500 to 600
Mechanics	325
Laborers	200

In 1955, clerical employees of the Bureau of Telecommunications Network in East Berlin received monthly wages ranging from 400 to 500 DME, whereas technical employees' wages ranged from 900 to 1,000 DME. 59/ Engineers' monthly salaries in 1955 ranged from 725 to 810 DME, whereas radio operators' and technicians' wages ranged from 364 to 710 DME. 60/

Given these rather high salaries for engineers, technicians, and white-collar employees of various kinds, the main explanation for the rather low average wage for all post and telecommunications employees lies in the wages paid to postal employees. Although actual wage data for postal employees are not currently available, this group is composed of large numbers of relatively unskilled employees who receive substantially lower wages than the more skilled employees of the telecommunications sector.

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3. Training.

The Ministry of Post and Telecommunications in East Germany apparently is suffering from a shortage of competent technicians. According to Kurt Gebhardt, Deputy Minister of Post and Telecommunications, the shortage of skilled manpower is a primary cause of the current inadequacies of East German telecommunications. 61/ The shortage, according to Gebhardt, stems from two conditions -- a lack of qualified instructors in technical subjects and a tendency on the part of newly trained personnel to accept more lucrative employment in industry or to defect to the West, where they are assured of better working conditions in their specialized fields. 62/ The increasing complexity of the equipment used by the Ministry, which includes microwave radio relay equipment and high-capacity terminal telephone and telegraph equipment, will continue to aggravate this situation unless a concerted effort is made to expand the training activities of the Ministry.

The Ministry currently operates technical telecommunications schools in Berlin, Koenigs Wusterhausen, Dresden, Leipzig, Naumburg, and other cities. 63/ In addition, a number of universities and academies in the country offer courses in electronics and in telecommunications subjects. 64/ It is planned that universities and academies will graduate 281 students in the field of post and telecommunications in 1958 and 257 in 1959. 65/

An extensive on-the-job training program is being conducted in support of the formal, full-time training effort of the Ministry. On-the-job training activities involving the complexities of electronics and telecommunications are difficult to teach. Any substantial long-range improvement in the technical level of employees of the Ministry must hinge on full-time training activities. The number of students taking such training and the competence of instructors will be important determining factors in the future improvement, efficiency, and expansion of the post and telecommunications system in East Germany.

4. Productivity.

Lack of detailed information on the functional distribution of employees of the Ministry of Post and Telecommunications in East Germany precludes measurement of labor productivity in physical terms. A measure of labor productivity, however, has been derived by dividing total revenue of the Ministry (see Table 1\*) by total employees (see Table 6\*\*). The results of these calculations are shown in Table 8\*\*\* and are illustrated graphically in Figure 3.\*\*\*\*

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\* P. 7, above.

\*\* P. 18, above.

\*\*\* Table 8 follows on p. 22.

\*\*\*\* Following p. 22.



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Table 8

Estimated Productivity of Employees  
of the Ministry of Post and Telecommunications  
in East Germany  
1950-57

<u>Year</u>	<u>Average Revenue per Employee a/ (Current DME)</u>	<u>Index (1950 = 100)</u>	<u>Yearly Growth in Labor Productivity (Percent)</u>
1950	6,776	100	
1951	6,725	99	-1
1952	6,386	94	-5
1953	7,131	105	+12
1954	6,031	89	-15
1955	6,665	98	+11
1956	6,907	102	+4
1957	7,021	104	+2

a. Derived by dividing total revenue (see Table 1, p. 7, above), by the total number of employees of the Ministry of Post and Telecommunications (see Table 5, p. 17, above).

The data show that labor productivity declined during 1951 and 1952 in the face of increasing total revenue. This decline resulted from the expansion of the labor force at a rate in excess of revenue growth. In 1953, revenue continued to expand while a decrease occurred in the labor force, thus giving rise to a substantial productivity gain. Then, in 1954, total revenue declined while the labor force expanded. The decline in total revenue resulted from substantial decreases that occurred during the year in prices charged for postal services.

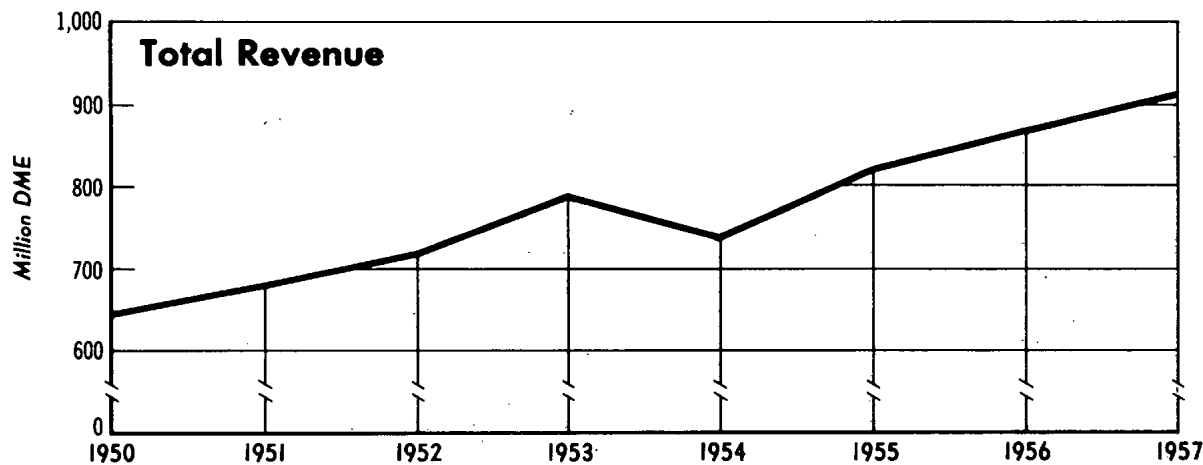
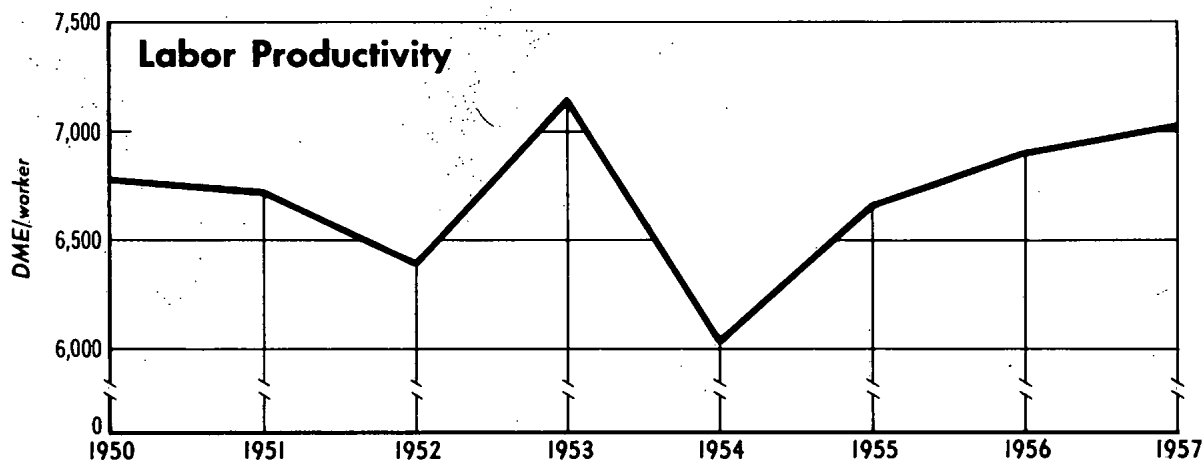
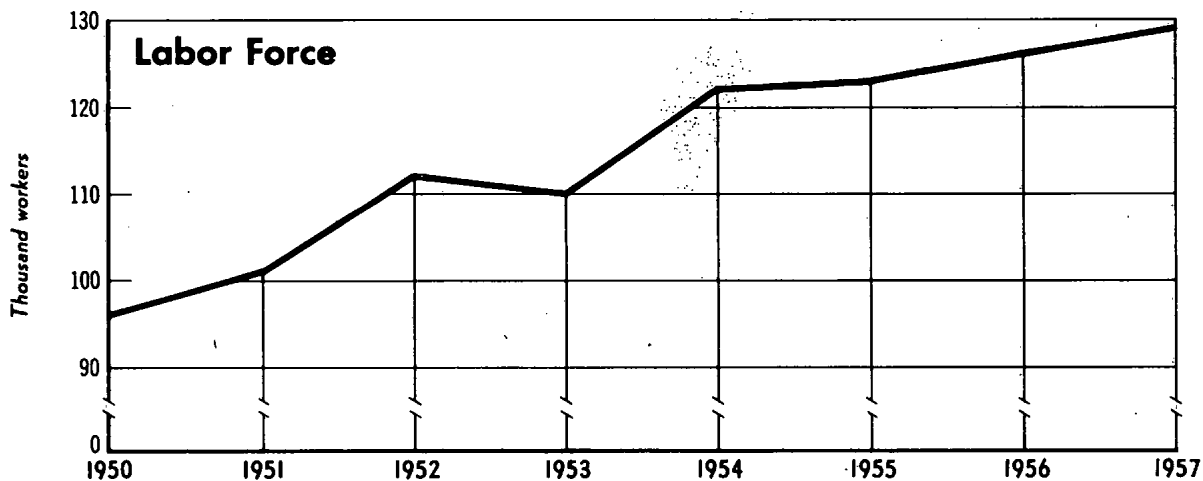
In 1955 an increase in labor productivity of 11 percent occurred. This was followed by increases in 1956 and 1957 of only 4 percent and 2 percent, respectively. This decreasing rate of increase in productivity was caused by the steadily declining rate of growth in total revenue and the steadily rising rate of growth in the labor force during this 3-year period.

Fluctuations in labor productivity, as reflected annually by the relationship between total revenue and total labor force, make imprecise the projections of future trends. With the exception of the year 1954, total revenue has been expanding at a reasonably stable rate. The labor force, on the other hand, has been less stable in its growth rate.

**SECRET**

Figure 3

**EAST GERMANY**  
**LABOR FORCE, LABOR PRODUCTIVITY, AND TOTAL REVENUE**  
**OF THE MINISTRY OF POST AND TELECOMMUNICATIONS**  
1950-57



27000 6-58

**SECRET**

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If the growth rate in the labor force settles down -- and the 1955-57 period indicates that such a trend may be setting in\* -- then future productivity gains should become more steady. In addition, future productivity gains should be greater than those experienced in 1956 and 1957.

In attempting to increase labor productivity, the Ministry of Post and Telecommunications has embarked on a twofold program which includes attempts to curtail the size of the administrative staff of the Ministry and to increase the specialization of labor. The administrative staff is to be reduced 10 percent in size by 1960 compared with the level in 1955. 66/ This reduction is to be accomplished primarily through the introduction of modern office machinery, such as calculators. Increased specialization of labor is to be achieved by the formation of specialized brigades of workers to perform specific tasks, such as installing telephone booths, erecting television antennas, and splicing cables. 67/

The primary factor in future gains in labor productivity appears to be the stabilization of the labor force at or near its present level. The normal turnover in personnel is in itself a serious obstacle to achieving greater productivity, but an expanding labor force, especially in such a highly skilled sector of the economy, presents obstacles of even greater magnitude. The introduction of new techniques and of automation should assist in the achievement of greater productivity. In these terms, East Germany is not a backward area, but such gains as might otherwise accrue from new techniques and equipment could easily be offset by an unstable labor force. Thus a large part of the future growth in labor productivity will depend on the level of training and the stability which the Ministry of Post and Telecommunications is able to achieve for its labor force.

#### E. Equipment.

The telecommunications equipment industry in East Germany is the largest in the European Satellites and is second only to the USSR in the Sino-Soviet Bloc. Within the East German economy it accounts for nearly 2 percent of gross national product. 68/ The Ministry of Post and Telecommunications obtains almost all of its telecommunications equipment from the production of the East German industry.

##### 1. Production.

In spite of damage received during World War II the telecommunications equipment industry "inherited" by the Soviet occupation authority in East Germany was one of the finest and best developed in the world. Early occupation policy reduced the capacity of the industry by confiscation of the most modern equipment and the best factories for shipment to the USSR. In addition, the normal production capacity of the remaining facilities was lessened by transfer

\* As pointed out in D, 1, p. 15, above, evidence indicates that future growth in the labor force will not be so large as past growth, because of stabilizing pressures.

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of some of the best technicians and managers to the USSR. The drop in production resulting from these losses eventually led to a change in Soviet policy. Under the new policy, production was stressed in order to provide East German exports to the USSR as reparations payments. The new policy remained in effect until 1953, at which time much of the control of industry passed to the East German government. It is estimated that until this time 80 percent of the production of telecommunications equipment went to the USSR. 69/

Telecommunications equipment is produced by about 90 factories under the administrative control of the Ministry of General Machine Construction. 70/ The diversity of production ranges from simple electronic components to complex microwave radio relay facilities. Because the USSR exerts strong influence on production schedules, the trend has been to produce those items which the USSR has not been able to produce in quantities sufficient for its own current needs or items which it has not wanted to produce. Thus major items of production for 1950-57 have been microwave equipment, large radiobroadcasting transmitters, electron tubes, television receivers, and coaxial cable. Because the control of the USSR over the East German economy has lessened since 1953, this trend also has diminished.

The domestic production of the East German telecommunications industry can provide the Ministry of Post and Telecommunications with all of its requirements for equipment. Whether the Ministry is able to fill these requirements depends on the amount of current production exported to the USSR, to other Satellites, and to non-Soviet Bloc countries. Before 1953 the Ministry was unable to obtain much of the equipment needed for domestic purposes. The bulk of equipment that was obtained was used to provide or add to telecommunications service for the Soviet army, the East German border police, the East German army, and the East German Communist Party. Since 1953 the needs of the Ministry have been more readily filled. The reduction in Soviet demands probably contributed to this change.

Within the Soviet Bloc there is a growing movement toward specialization in the development and production of telecommunications apparatus by countries. In an agreement reached in 1956, East Germany was to specialize in radio transmitters and receivers, Hungary in carrier-frequency equipment, Czechoslovakia in television transmitters and receivers, and the USSR in telephone apparatus. 71/ Progress in implementing the agreement has been slow because of political disruptions within the Satellites since the time of the agreement.

Production plans reveal substantial acceleration. In a division of the Ministry of General Machine Construction, which produces most of the telecommunications equipment, an increase in production of almost 200 percent is planned from 1955 to 1960. 72/ Planned

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production of television receivers for the same period of time shows an increase of 900 percent. 73/ There are, however, some indications of lower production goals for 1958. 74/ The reduced goals may be applied to items such as television receivers and may therefore have only a slight effect on the development of an expanded East German telecommunications system.

## 2. Imports.

The Ministry of Post and Telecommunications in East Germany imports no telecommunications equipment from the Soviet Bloc and little from the West. Equipment from the West has included radio-broadcasting transmitters, 75/ radiobroadcast receivers, 76/ antennas, 77/ and teletype apparatus 78/ from West Germany and mobile television equipment from the UK. 79/ Importation of telecommunications equipment has been mainly on a unit basis.

The telecommunications equipment industry imports nearly all of its raw materials and many of its electronic components. Within the Soviet Bloc the USSR is the main source of raw materials, followed by Poland. Outside the Bloc, Sweden has supplied capacitor paper, tungsten, and molybdenum; Switzerland, fine precision wire; Austria, tungsten; and the Netherlands, electronic components. 80/ Future imports of raw materials and electronic components probably will increase from both Bloc and non-Bloc countries in order to fulfill plans to continue expansion of the telecommunications industry.

## 3. Exports.

The Ministry of Post and Telecommunications itself in East Germany neither produces nor exports telecommunications equipment. The Ministry does, however, send representatives to participate in trade negotiations with other countries and may act as agent for an importing country. In recent negotiations between Poland and East Germany, for example, Poland requested that representatives of the Ministry inspect equipment before shipment to Poland.

The telecommunications industry of East Germany exports mainly to the Sino-Soviet Bloc. Exports include a wide variety of items, ranging from electron tubes to equipment for complete telecommunications networks. All Bloc countries, but principally the USSR, have imported telecommunications equipment from East Germany. Although the USSR no longer demands 80 percent of the output as it did before 1953, it still is the dominant purchaser of such equipment as telecommunications cable and microwave radio relay equipment.

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Countries outside the Sino-Soviet Bloc have imported telecommunications equipment from East Germany in recent years. Some of these countries are Finland, Greece, Indonesia, the Netherlands, Sweden, Turkey, West Germany, and Yemen. 81/ The equipment imported by these countries included radiobroadcasting transmitters, telephone facilities, and telecommunications wire and cable.

Exports to Sino-Soviet Bloc countries probably will continue to grow as East German capacity improves. Future exports to non-Bloc countries probably will increase in consonance with the Soviet policy of penetration into non-Bloc markets.

#### 4. Technology.

Research and development for the Ministry of Post and Telecommunications in East Germany is conducted by the Institute for Post and Telecommunications Techniques and the Main Administration for Radio and Television Technology. The Institute for Post and Telecommunications Techniques is responsible for conducting technical experiments and developing improved equipment for post and telecommunications services. The Main Administration for Radio and Television Technology is responsible for research and development in the field of broadcasting.

In addition to the above organization, each main administration of the Ministry contains a scientific-technical council. Although little information is available as to the function of these councils, they probably operate as groups for planning and coordinating research for the many components of the main administrations.

Besides the research and development programs initiated by and for the Ministry of Post and Telecommunications, there are also imposed research programs for projects involving more than one ministry. In these cases, direction and control of the project usually is received by the Central Office for Research and Technology through working groups. 82/ These working groups are composed of specialists representing the various fields of technology involved in the project. In the field of telecommunications, one such working group had responsibility for "commercial telecommunications techniques for frequencies over 100 megacycles." 83/ A report on a meeting of this working group indicated that the meeting was attended by representatives from the Ministry of Post and Telecommunications, from the Ministry of General Machine Construction, and from the Institute for Nuclear Physics in Dresden. The procedure of the working group apparently was to assign a project to a scientist or technician who, after appropriate study, submitted a preliminary survey report. On the basis of this report the entire working group then

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decided which course to follow in carrying out the project and which research organizations were to undertake the various phases of the project.

A few of the many projects proposed for development under the Second Five Year Plan (1956-60) are the following:

- a. Carrier-frequency equipment for use with tele-communications cables, the project to be completed by 1957. 84/
- b. Coaxial cable equipment for use with microwave radio relay circuits. 85/
- c. Equipment and instruments for television studios. 86/
- d. Television facilities for industrial applications, the project to be completed by 1957. 87/
- e. Color television transmitting facilities, the project to be completed by 1960. 88/
- f. Remote monitoring and emergency switchover facilities for microwave radio relay circuits. 89/
- g. Very high frequency (VHF) point-to-point radio equipment for the East German railroad system. 90/
- h. Telephone terminal equipment with a capacity of 120 channels for microwave radio relay circuits. 91/

This list of projects for research and development is extensive. Defection of scientists and engineers and shortages of materials and equipment have heretofore retarded the initiation or completion of the projects. Furthermore, Soviet policy generally does not encourage the development of scientific competence in East Germany. 92/ These factors can be expected to continue to influence adversely the progress of future research and development.

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III. Postal System.

Postal service is available throughout East Germany. Every community is served either by a post office or by a postal station. In 1953, for example, there were 9,782 communities in East Germany serviced by 9,835 postal installations. 93/ A complete breakdown of post offices for 1950-57 is shown in Table 9.\*

The volume of postal service in East Germany, shown in Table 10,\*\* has increased steadily since 1950. Letter volume has increased little, but more substantial growths have occurred in money order, package, and periodical and newspaper volumes. With the decrease in population in East Germany since 1950, postal volumes per person have increased more than the data in the table indicate.

Organizational control of the postal system in East Germany rests with the Main Administration for Post and Telecommunications within the Ministry of Post and Telecommunications. 94/ Established in 1949, this administration has the following departments and offices:

Legal Department  
 Postal Service Department  
 Foreign Postal Service Department  
 Postal Newspaper Department  
 Postal Checking Office  
 Postal Savings Office  
 Postal Newspaper Office

In addition to the functions implied by the titles of the above offices, the Main Administration for Post and Telecommunications has charge of personnel, planning, parcel post, and railroad and motor vehicle transportation of postal material.

The postal administration in East Germany also provides postal money order, checking, and savings services for the economy. The volumes of activity in postal checking and postal savings are shown in Table 11.\*\*\*

On 1 October 1956 a new and reduced schedule of international postal rates was put into effect. The new rates, shown in Table 12,\*\*\*\* represent a substantial reduction in the prices charged for international postal service. The largest reductions were in airmail and parcel post rates, which were reduced about 33 percent.† 95/

\* Table 9 follows on p. 29.

\*\* Table 10 follows on p. 30.

\*\*\* Table 11 follows on p. 31.

\*\*\*\* Table 12 follows on p. 32.

† Continued on p. 34.



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Table 9

Estimated Number of Post Offices of the Ministry of Post and Telecommunications  
in East Germany  
1950-57

	Units							
	<u>1950</u>	<u>1951 a/</u>	<u>1952 a/</u>	<u>1953 a/</u>	<u>1954 a/</u>	<u>1955 a/</u>	<u>1956 a/</u>	<u>1957 b/</u>
Main post offices	122 <u>c/</u>	126	129	129	129	129	129	129
Post offices	100 <u>c/</u>	214	503	727	561	552	595	638
Branch post offices	1,655 <u>c/</u>	1,561	1,288	1,064	1,251	1,231	1,203	1,175
Postal stations, Class I	1,960 <u>c/</u>	1,910	1,891	1,911	1,936	1,990	1,990	1,990
Postal stations, Class II	3,380 <u>c/</u>	3,644	4,235	4,946	5,968	6,570	6,819	7,068
Auxiliary postal stations	1,600 <u>c/</u>	1,533	1,384	1,058	745	637	557	477
Total	<u>8,817 a/</u>	<u>8,988</u>	<u>9,430</u>	<u>9,835</u>	<u>10,590</u>	<u>11,109</u>	<u>11,293</u>	<u>11,477</u>

a. 96/

b. Extrapolated by applying the absolute increase or decrease shown between 1955 and 1956.

c. Extrapolated, using graphic analysis.

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Table 10

Estimated Postal Volume of the Ministry of Post and Telecommunications  
in East Germany a/  
1950-57

	Million Units							
	1950	1951	1952	1953	1954	1955	1956	1957
Letters	1,142 <u>b/</u>	1,128 <u>b/</u>	1,124 <u>b/</u>	1,176 <u>b/</u>	1,256 <u>b/</u>	1,282 <u>b/</u>	1,281 <u>b/</u>	1,280 <u>c/</u>
Money orders (regular money orders and post card money orders)	27 <u>b/</u>	27 <u>b/</u>	28 <u>b/</u>	30 <u>b/</u>	31 <u>b/</u>	33 <u>b/</u>	36 <u>b/</u>	38 <u>c/</u>
Packages	31 <u>b/</u>	28 <u>b/</u>	29 <u>b/</u>	30 <u>b/</u>	34 <u>b/</u>	34 <u>b/</u>	36 <u>b/</u>	37 <u>c/</u>
Newspapers and periodicals	1,464 <u>b/</u>	1,456 <u>b/</u>	1,651 <u>b/</u>	1,728 <u>b/</u>	1,877 <u>b/</u>	1,974 <u>b/</u>	2,089 <u>b/</u>	2,205 <u>c/</u>
Total	<u>2,664</u>	<u>2,640</u>	<u>2,833</u>	<u>2,963</u>	<u>3,198</u>	<u>3,322</u>	<u>3,442</u>	<u>3,561</u>

a. Totals are derived from unrounded data and may not agree with the sum of their rounded components.

b. 27/

c. Extrapolated by applying the absolute increase or decrease shown between 1955 and 1956.

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Table 11

Estimated Postal Checking and Postal Savings Activity of the Ministry of Post and Telecommunications  
in East Germany  
1950-57

	Unit	1950 a/	1951 a/	1952 a/	1953 a/	1954 a/	1955 a/	1956 a/	1957 b/
Postal checking accounts									
Total accounts	Thousand	347	235	221	203	198	194	189	184
Yearly average balance	Million current DME	565	408	322	289	275	251	202	152
Deposits	Million	36	33	31	29	29	29	30	32
	Million current DME	15,500	13,800	14,300	15,400	16,300	11,100	8,600	6,100
Withdrawals	Million	26	21	19	16	17	18	18	18
	Million current DME	15,600	13,900	14,200	15,400	16,300	11,200	8,600	6,000
Postal savings accounts									
Total accounts	Thousand	323	413	545	646	778	934	1,078	1,223
Yearly average balance	Million current DME	35	46	76	89	123	152	202	253
Deposits	Thousand	406	532	780	804	1,116	1,313	1,613	1,914
	Thousand current DME	45,200	61,100	108,300	108,300	157,500	206,200	266,400	326,600
Withdrawals	Thousand	625	940	1,386	1,569	1,941	2,223	2,341	2,459
	Thousand current DME	35,700	49,600	78,400	95,500	123,700	177,300	215,700	254,100

a. 98/

b. Extrapolated by applying the absolute increase or decrease shown between 1955 and 1956.

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Table 12

International Postal Rates  
of the Ministry of Post and Telecommunications  
in East Germany a/  
1956

	<u>Rate</u> <u>(Pfennigs)</u>
Letters up to 20 grams	25
Each additional 20 grams or part thereof	15
Postcards	15
With prepaid reply card	30
Commercial papers up to 50 grams	10
Each additional 50 grams or part thereof	5
Printed matter up to 50 grams	10
Each additional 50 grams or part thereof	5
Printed matter at a reduced rate per 50 grams	5
Samples up to 50 grams	10
Each additional 50 grams or part thereof	5
Mixed mail up to 50 grams	10
Each additional 50 grams or part thereof	5
Minimum rate for mail also containing commercial paper	25
Small parcels per 50 grams	10
Minimum	50
Registration	50

a. Effective as of 1 October 1956. 99/

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Table 12

International Postal Rates  
of the Ministry of Post and Telecommunications  
in East Germany  
1956  
(Continued)

	<u>Rate</u> <u>(Pfennigs)</u>
Insured letters	
Registration rate	50
Insurance rate per 300 gold francs of declared value	40
Insured parcels per 50 grams or part thereof	20
Minimum	100
Registration	50
Insured packages	
Handling charges	40
Insurance rate per 200 gold francs of declared value	40
Rates for payment of duty	
Letters	30
Packages	60
Special delivery rates	
Letters	50
Packages	60
Rates for withdrawal and changes of address of letters and packages	
Application rate	30

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Table 12

International Postal Rates  
of the Ministry of Post and Telecommunications  
in East Germany  
1956  
(Continued)

	Rate (Pfennigs)
Inquiries and information calls	
Letters and packages	30
Return receipts	25
When demanded later	30
Packing costs for packages	40
Notice of inability to deliver	30

No important changes in the East German postal service are expected to occur in the coming years. This service probably will continue to grow and to meet the needs of the East German population.

#### IV. Telephone and Telegraph System.

The Minister of Post and Telecommunications is charged with the over-all responsibility for providing public telephone and telegraph services in East Germany. The Main Administration for Telecommunications performs the planning, installation, operation, and maintenance functions for the Ministry. Telephone and telegraph services are provided by an extensive wireline and cable network. Point-to-point radio facilities are, in the main, utilized to provide international communications. The system as currently constituted meets the needs of the government, but service available to private consumers is not extensive.

##### A. Telephone.

Telephone service is the principal domestic telecommunications service used in East Germany. This service is available in all parts of the country. A high proportion of the telephone

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exchanges in use in urban areas are automatic, whereas those in rural areas are mainly manual. Interurban facilities are for the most part manually operated.

1. Local.

Table 13 and Table 14\* show the total number of local telephone exchanges, the total capacity of these exchanges, and the total number of telephone subscriber lines and thus give some indication of the amount of available telephone service in East Germany.

Table 13

Estimated Telephone Exchange Capacity  
and Number of Main Subscriber Lines  
of the Ministry of Post and Telecommunications  
in East Germany  
1950-57

Year	Telephone Exchange Capacity (Lines)			Main Subscriber Lines in Use
	Automatic	Manual	Total	
1950	414 <u>a/</u>	66 <u>a/</u>	480	357 <u>a/</u>
1951	417 <u>a/</u>	69 <u>a/</u>	486	378 <u>a/</u>
1952	448 <u>a/</u>	71 <u>a/</u>	519	401 <u>a/</u>
1953	482 <u>a/</u>	70 <u>a/</u>	552	425 <u>a/</u>
1954	505 <u>a/</u>	64 <u>a/</u>	569	457 <u>a/</u>
1955	520 <u>a/</u>	58 <u>a/</u>	578	481 <u>a/</u>
1956	532 <u>b/</u>	55 <u>c/</u>	587 <u>c/</u>	506 <u>d/</u>
1957	559 <u>b/</u>	49 <u>c/</u>	608 <u>c/</u>	531 <u>e/</u>

a. 100/

b. Manual telephone exchange capacity subtracted from total telephone exchange capacity.

c. 101/

d. 102/

e. Assuming the same growth as in 1955-56.

\* Table 14 follows on p. 36.

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Table 14

Estimated Number of Local Telephone Exchanges  
of the Ministry of Post and Telecommunications  
in East Germany  
1950-57

			Units
<u>Local Telephone Exchanges</u>			
<u>Year</u>	<u>Automatic</u>	<u>Manual</u>	<u>Total</u>
1950	1,017 <u>a/</u>	524 <u>b/</u>	1,541 <u>b/</u>
1951	1,027 <u>a/</u>	521 <u>b/</u>	1,548 <u>b/</u>
1952	1,030 <u>a/</u>	523 <u>b/</u>	1,553 <u>b/</u>
1953	1,053 <u>a/</u>	504 <u>b/</u>	1,557 <u>b/</u>
1954	1,097 <u>a/</u>	463 <u>b/</u>	1,560 <u>b/</u>
1955	1,156 <u>a/</u>	403 <u>b/</u>	1,559 <u>b/</u>
1956	1,194 <u>a/</u>	372 <u>b/</u>	1,566 <u>b/</u>
1957	1,232 <u>c/</u>	341 <u>c/</u>	1,573 <u>c/</u>

a. Total telephone exchanges minus manual telephone exchanges.

b. 103/

c. Extrapolated by applying the absolute increase or decrease shown between 1955 and 1956.

Automatic telephone exchanges are used to provide most of the urban telephone service in East Germany. In 1950, 66 percent of the exchanges and 86 percent of the total subscriber line capacity available were provided by automatic equipment. In 1957, 78 percent of the total telephone exchanges and more than 92 percent of the total subscriber line capacity available were provided by automatic equipment. At the same time, use of manual telephone exchange equipment has been declining. Plans indicate a continuation in the automation of urban and rural telephone exchanges. 104/

The total number of main telephone subscriber lines\* increased 49 percent during 1950-57. The growth of main telephone subscriber lines has not kept pace with East German plans. For example, a total of 157,000 main subscriber lines was to be added during 1950-55, but only 122,000 lines were provided. 105/ This deficit of 35,000 lines was not made up until some time in 1957.

\* Figures in this report do not give the number of subscribers or the number of telephone instruments in use. The number of multiple-party lines in use also is not known.



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A comparison of the total number of main subscriber lines with the total telephone exchange capacity (total number of line positions) gives some indication of telephone exchange utilization. Telephone exchange capacity was used no less than 74 percent in 1950. This usage increased to a minimum of 87 percent in 1957. The percentage of use of telephone exchange capacity in 1957 thus shows improvement over that in 1950, and further improvement appears to be forthcoming in the light of the East German plan target of 93 percent by the end of 1960. 106/ Some excess capacity in telephone exchanges is necessary to take care of emergency requirements and to permit rapid reestablishment of service after equipment failures.

Delays in placing telephone calls occur in spite of the existence of excess capacity. The lack of adequate capability for local exchange switching appears to be a primary reason for delays experienced in the placement of local telephone calls. Unreliable or obsolete switching equipment, possible overloading of main subscriber lines, and the lack of adequately trained manpower also could be responsible for the poor performance of the local telephone system. The average waiting time involved in completing local telephone calls is shown as follows 107/:

<u>Year</u>	<u>Average Waiting Time (Minutes)</u>
1950	30.0
1953	25.5
1954	22.7
1955	18.3

Delay in placing local telephone calls was reduced by about 40 percent between 1950 and 1955, but even the 1955 figure of 18.3 minutes is inordinately high for the amount of automatic telephone equipment in use.

The number of local telephone calls completed during 1950-56 is shown as follows 108/:

<u>Year</u>	<u>Local Telephone Calls (Million)</u>
1950	644.2
1951	658.5
1952	714.3
1953	718.4
1954	771.0
1955	770.2
1956	772.9

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The number of local telephone calls completed in 1956 was 20 percent greater than the number completed in 1950. During the same period, total telephone exchange capacity increased 22 percent. Growth in number of local telephone calls, therefore, seems to be closely related to growth in the capacity of local telephone exchanges.

Private consumer use of telephone service is extremely limited. In 1956, only 5 percent of the telephone subscriber lines of East Germany were connected to private residences. 109/ Even with the inclusion of 18,000 telephone booths the total figure shows a low level of availability of telephone service to the public. 110/ By the end of 1960, only 18 percent of the total number of telephone subscriber lines are to be available for private use, and only a 23-percent increase in the number of telephone booths is planned. 111/ The planned growth, therefore, does not provide for much improvement in telephone service for private consumers.

2. Interurban.

Interurban telephone calls are predominantly handled through manually operated exchanges located in the principal cities of East Germany. At the beginning of 1957, only 2 percent of interurban service was provided by automatic equipment. 112/ Table 15\* shows the number of interurban telephone exchanges, the number of operator switchboard positions available, and the total number of telephone calls handled through interurban exchanges.

The number of interurban telephone exchanges decreased 4 percent during 1950-57, but the number of switchboard positions increased 33 percent, and the number of interurban telephone calls increased by about 40 percent. In spite of the growth in switchboard positions, delays are still encountered in placing interurban telephone calls. The extent of this delay is shown as follows 113/:

<u>Year</u>	<u>Average Waiting Time (Minutes)</u>
1950	62.6
1953	58.2
1954	51.4
1955	45.3

The use of manual interurban switchboards and the lack of adequate direct interurban lines are largely responsible for this poor performance. 114/

\* Table 15 follows on p. 39.

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Table 15

Estimated Number of Interurban Telephone Exchanges,  
Switchboard Positions, and Telephone Calls  
of the Ministry of Post and Telecommunications  
in East Germany  
1950-57

Year	Interurban Telephone Exchanges		Interurban Telephone Calls (Million)
	Units	Switchboard Positions	
1950	175 <u>a/</u>	1,921 <u>a/</u>	88.6 <u>b/</u>
1951	<u>b/</u> 173	2,007	95.0
1952	<u>b/</u> 171	2,093	98.5
1953	<u>b/</u> 170	2,202	101.0
1954	<u>b/</u> 169	2,299	110.3
1955	<u>b/</u> 169	2,405	115.4
1956	<u>b/</u> 168	2,477	119.3
1957	168 <u>c/</u>	2,549	123.2 <u>d/</u>

a. Extrapolated by applying the absolute increase or decrease shown between 1952 and 1951 to 1951-50.

b. 115/

c. Assuming no change from 1956 to 1957.

d. Extrapolated by applying the absolute increase or decrease shown between 1955 and 1956.

Plans are being developed for the introduction of automatic interurban switching equipment. 116/ The use of this equipment should improve speed of service without any appreciable increase in the number of interurban switchboard positions now installed. Quantity use of automatic interurban switching equipment is not expected until after 1960.

In 1955, only 10 percent of the available interurban telephone channels provided immediate direct connections. 117/ Additional interurban facilities are necessary if waiting time caused by this deficiency is to be overcome.

The Ministry of Post and Telecommunications appears to recognize the need for improved interurban telephone services. Plans include the expanded use of coaxial and multiconductor cable

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as well as microwave radio relay apparatus. Equipment for multiplying circuit capacity, of 60- and 120-channel capacity, is to be used more widely after 1958. 118/

B. Telegraph.

The telegraph system in East Germany uses the same wireline network that is employed for telephone service. The two main types of telegraph services are regular telegraph and TELEX. These services are available throughout East Germany. Facsimile service is not widely used domestically but is to be available between Berlin and the districts of East Germany during the period of the Second Five Year Plan. 119/

1. Regular.

Regular telegraph service plays a role subordinate to telephone service in East Germany. The telegraph network uses modern teletype apparatus, but the switching of traffic is done manually. Telegraph offices generally are located in the same buildings as telephone exchanges.

An average of 8 million telegrams per year was handled during 1950-57 (see Table 16\*). The absence of significant growth in telegraph service probably is attributable to the predominating role of telephone service and to the expanding use of TELEX service.

No evidence is available to suggest the intention to expand and to improve regular telegraph service in the immediate future. East German plans do, however, provide for the conversion of the present manually operated switching system to a system of full automatic operation some time after 1959. With the introduction of automatic switching equipment the transit time for telegrams between cities is to be reduced to 10 minutes by 1960. 120/ Not much improvement in the efficiency of the East German telegraph service can be expected until automatic switching equipment is installed. Improvement in speed of service may encourage greater use of telegraph service.

2. TELEX.

A subscriber telegraph network with manual switching was in operation in Germany before World War II. 121/ The portion of this network located in East Germany was rehabilitated for use during the period following the end of the war. Beginning in 1955,

\* Table 16 follows on p: 41.

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Table 16

Estimated Number of Telegrams Transmitted over Facilities  
Operated by the Ministry of Post and Telecommunications  
in East Germany  
1950-57

<u>Year</u>	<u>Million Units</u> <u>Telegrams</u>
1950	9.8 <u>a/</u>
1951	7.8 <u>a/</u>
1952	7.3 <u>a/</u>
1953	7.6 <u>a/</u>
1954	7.5 <u>a/</u>
1955	7.6 <u>a/</u>
1956	8.0 <u>a/</u>
1957	8.4 <u>b/</u>

a. 122/

b. Extrapolated by applying the absolute increase or decrease shown between 1955 and 1956.

the Ministry of Post and Telecommunications began to install a fully automatic subscriber network known as TELEX. 123/ This automatic network is centered on both Berlin and Leipzig as the primary automatic relay stations. The map, Figure 4,\* shows the primary relay stations, the secondary relay stations, and the installed and planned substations of the TELEX network.

Table 17\*\* shows the number of TELEX exchanges and the number of subscribers connected to these exchanges. The number of subscribers is estimated to have grown more than 160 percent during 1952-57. According to the Second Five Year Plan, the number of subscribers is to be 275 percent higher in 1960 than in 1955. 124/ This increase, based upon estimates of the number of current subscribers, would amount to more than 4,500 subscribers by 1960. Other information (which is questionable) puts the figure at 8,000 subscribers by 1960. 125/ In either case, considerable expansion of the present system is planned.

\* Inside back cover.

\*\* Table 17 follows on p. 42.

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Table 17

Estimated Number of Exchanges and Subscribers  
in the Subscriber Telegraph Network  
of the Ministry of Post and Telecommunications  
in East Germany  
1952-57

Year	Units	
	Exchanges	Subscribers
1952 a/	10	651
1953 a/	12	792
1954 a/	15	955
1955 a/	15	1,217
1956 a/	18	1,284
1957	24 b/	1,704 c/

a. 126/

b. 127/

c. Computed, using the same ratio of subscribers to exchanges (71 to 1) as that estimated for 1956.

The TELEX network affords much greater speed and efficiency than was possible with the manual system. The manual system required about 20 minutes to complete a connection between Schwerin and Leipzig, whereas the new automatic equipment requires less than 1 minute for the same connection. 128/ The time saved increases traffic capacity, the net effect of which is to increase revenue and to reduce operating costs.

Impetus for the establishment of the TELEX system was given by the machine tractor stations. The system eventually will include a facility at each machine tractor station. 129/ Decentralization of East German industry undoubtedly will enlarge the need for this service.

The TELEX system provides a rapid direct telegraph service, for use by government and industry, between subscribers who require rapid record service.\* It is expected, therefore, that continued emphasis will be placed on the expansion and improvement of this important service. The system is interconnected with the international TELEX network.

\* The term record service denotes those telecommunications services which result in a written copy of the information transmitted.

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C. Common Telephone and Telegraph Facilities.

The telephone and telegraph services of the Ministry of Post and Telecommunications in East Germany are provided largely by common facilities consisting of wireline, microwave radio relay, and point-to-point radio networks. The wireline network, backed up by the microwave radio relay network, is the backbone of the East German telecommunications system. The wireline network is used primarily for domestic and international telephone and telegraph traffic. The microwave radio relay network is used for interurban relay of television programs and other telecommunications services. The point-to-point radio network is used primarily for the conduct of international telecommunications service.

1. Wireline.

The Ministry of Post and Telecommunications, through the Main Administration for Telecommunications, operates the major wireline network of East Germany. Other government agencies and the groups of Soviet Forces in Germany operate their own wireline networks in addition to leasing Ministry facilities. 130/ The Ministry wireline network is used for the transmission of telephone and telegraph traffic and is capable of meeting the minimum domestic and international requirements of East Germany. The routes of the network generally parallel major highways, except the Autobahns, and consist of open wirelines and aerial and underground multiconductor and coaxial cables. These line facilities extend throughout the country, with some international connections to adjacent countries. 131/ Copper, copper alloy, aluminum, and iron wire are used for open wirelines, whereas copper and aluminum conductors are used for multiconductor and coaxial cable lines. 132/

The long-distance, high-capacity portion of the network utilizes underground multiconductor and coaxial cables, which provide telephone and telegraph services to all major cities and towns. There are estimated to have been 7,990 kilometers (km) of operational long-distance multiconductor and coaxial cable line in 1951. 133/ Since this date, there has been no appreciable addition to these long-distance lines.

The short-distance, low-capacity portion of the network uses feeder lines consisting mostly of open wire, which connect with the main long-distance lines. 134/ The map, Figure 5,\* shows the principal wirelines of the Ministry of Post and Telecommunications.

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\* Inside back cover.

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Circuits of varying capacity are used in the wireline network. Underground multiconductor cable lines contain from 60 to more than 400 pairs of wire. The majority of these lines, however, contain less than 150 pairs. Major underground multiconductor cable lines with more than 400 pairs of wire exist between Potsdam and Magdeburg and between Berlin and Leipzig. 135/ Multiplex apparatus providing 8, 12, 15, or 24 telephone channels is used to increase the capacity of open wireline and multiconductor cable lines. 136/

During World II the wireline facilities of East Germany were seriously damaged. Immediately following the war the Soviet occupation forces dismantled and shipped to the USSR a substantial part of the then existing telephone and telegraph facilities. The remaining facilities were rehabilitated and were employed to meet Soviet needs as well as those of the newly established East German government. 137/

Beginning with the First Five Year Plan (1951-55), the Ministry of Post and Telecommunications undertook the systematic expansion of wireline network capacity. This expansion was achieved through the rehabilitation and more efficient utilization of existing wireline facilities. During this period, there was a minimum of new wireline construction. 138/

The Second Five Year Plan calls for further expansion and modernization of wireline facilities. Fulfillment of the plan in 1960 should effect an increase in telephone and telegraph circuit capacity. 139/ Increased circuit capacity will be achieved by improvement of and additions to existing wirelines, use of coaxial cable, and the introduction of 14- and 17-pair high-capacity carrier-frequency cable.\* Full utilization of the capacity of this kind of cable will be made possible by the introduction of 60- and 120-channel carrier-frequency telephone equipment. Some time after 1960, 240-channel equipment will be introduced. 140/ Both coaxial and multiconductor cable are used in the "Ring Around Berlin" network. This network provides telephone service and is used to bypass West Berlin and to isolate it from the surrounding Soviet Zone. Laying of cable for this network began in early 1955 and was completed late that year. 141/

Expansion of the wireline network, as proposed in the Second Five Year Plan, is to be achieved without an increase in the labor force. This plan by itself appears to be unrealistic in the face of known shortages of skilled telecommunications personnel. The shortages have already given rise to difficulties in the operation of the present network. 142/

\* The East German carrier-frequency cable consists of a number of pairs of wire plus one coaxial tube. Two cables are laid in parallel to provide a two-way circuit.



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East German export commitments appear to be draining off certain types of equipment necessary for the realization of some plan goals. For example, it is reported that the Kabelwerk Oberspree plant located in Berlin/Oberschoeneweide has been instructed to ship to Rumania its entire output of certain types of carrier-frequency telephone cable which had been earmarked for use in the expansion program for 1957. In consequence of this diversion, the Ministry canceled all 1957 plans for expanding the use of this type of cable. 143/

Shortages of competent personnel, equipment, and materials will probably prevent complete fulfillment of the goals of the Second Five Year Plan for expanding the wireline network.

2. Microwave.

Since 1951, East Germany has used microwave radio relay networks to supplement the existing wireline network. 144/ Presently there are two fixed microwave radio relay networks in the country. One is controlled and operated by the Ministry of Post and Telecommunications, and the other is controlled and operated by the Party Central Committee for joint use with the Garrisoned Peoples Police (KVP). 145/

a. Ministry of Post and Telecommunications Network.

The microwave radio relay network of the Ministry of Post and Telecommunications in East Germany was started in 1951 with the construction of a 28-km line, used exclusively for telephone service, between Nauen and Berlin. 146/ About 1 year later a 13-km line, used exclusively for connecting the television studio in Berlin/Adlershof with the television transmitter located at the Stadthaus in East Berlin, was completed. 147/ By 1956 the network consisted of 1,060 km of line. In addition, 370 km were planned for completion during 1957. 148/ Further plans call for the completion, by the end of 1958, of microwave radio relay lines between Berlin and principal cities in all districts. 149/ The map, Figure 6,\* shows lines completed, under construction, and planned through 1957.

Before 1956 the microwave radio relay network of the Ministry of Post and Telecommunications used equipment which provided up to 8 and possibly 16 telephone channels. Alternatively, each telephone channel was capable of handling three simultaneous teletype channels by the introduction of carrier apparatus. New equipment having a capacity of 24 telephone channels is under development for use on the expanded network in 1958. 150/

\* Inside back cover.

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The lack of progress made in the expansion and modernization of the microwave radio relay network of the Ministry of Post and Telecommunications as well as of the entire telecommunications system has been subject to frequent criticism. 151/ The major causes of the lack of progress seem to be the use of low-capacity, obsolete equipment and the lack of qualified telecommunications personnel. 152/ It is doubtful that the expansion and modernization of the microwave network will be accomplished as planned unless these problems are overcome. 153/

50X1



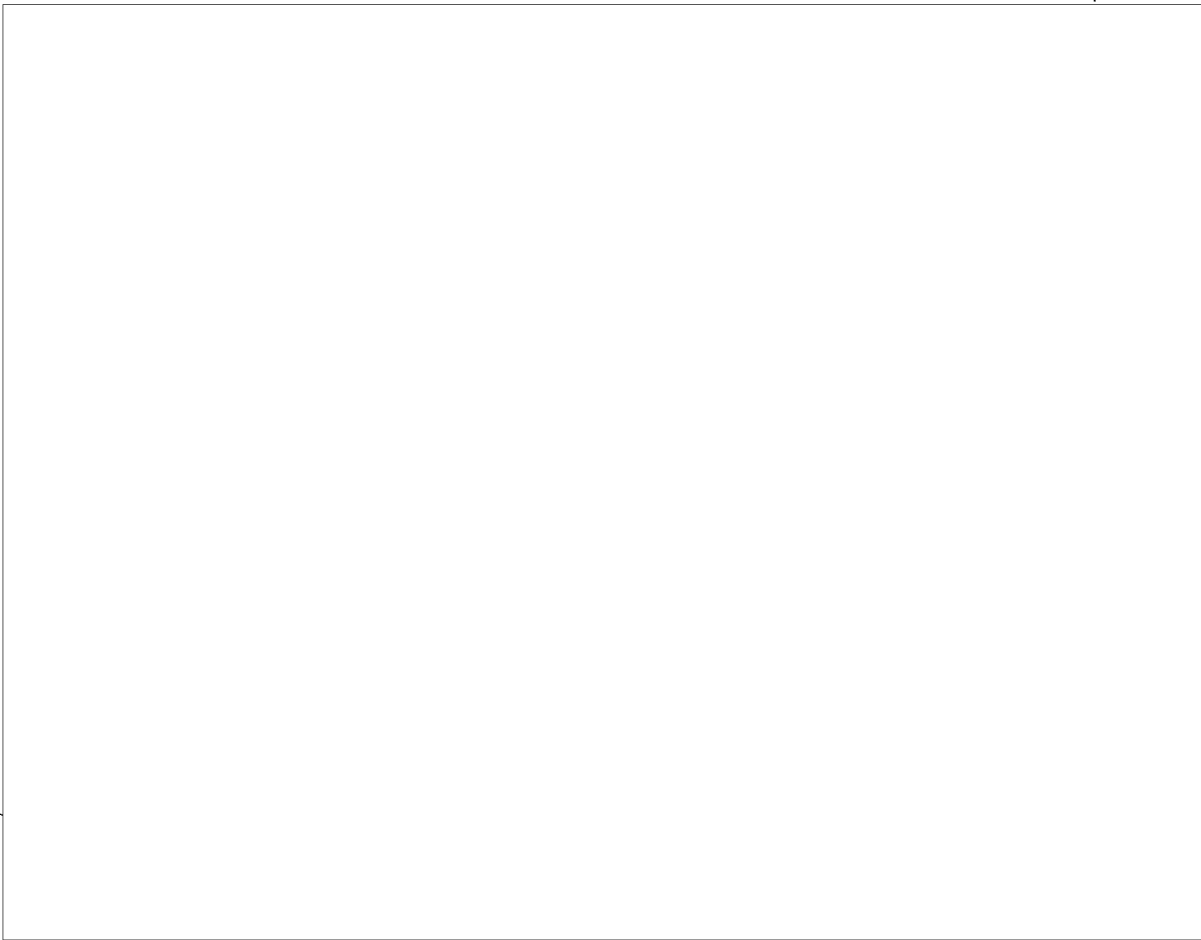
\* Inside back cover.

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50X1



3. Point-to-Point Radio.

The extensive wireline and microwave radio relay networks of East Germany make it unnecessary for the Ministry of Post and Telecommunications to use domestic point-to-point radio facilities.

International point-to-point radio facilities are located near Berlin, with the transmitting station at Koenigs Wusterhausen and the receiving station at Beelitz. International point-to-point radiotelegraph circuits exist to all Soviet Bloc countries. Direct circuits are planned to Buenos Aires, Santiago (Chile), Rio de Janeiro, New York, Ottawa, Djakarta, Bangkok, Manila, and Beirut. International telegraph service to the Middle East is now routed through Switzerland, and service to other parts of the world is available through Amsterdam and Paris. 164/

Additional plans call for direct international radiotelephone service. 165/ There are indications that the radio station being rebuilt at Nauen will provide this service. 166/

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V. Broadcasting System.

The East German broadcasting system is composed of radio, wire-diffusion, and television broadcasting networks. Of these, the domestic radiobroadcasting network, which includes both AM and FM stations, is the most extensive. AM radiobroadcasting coverage extends to all areas of the country and is considered adequate. FM radiobroadcasting coverage is more limited, however, and further expansion of FM facilities is planned. International radiobroadcasting coverage, aimed primarily at West Germany, is provided by a small network of AM radiobroadcasting stations. This network is supplemented by powerful domestic radiobroadcasting stations which reach beyond the borders of East Germany.

The wire-diffusion network of East Germany is of little significance and is restricted primarily to industrial plants. No significant expansion of this network is expected in the near future.

The East German television network is less extensive than the radiobroadcasting network. The television network, however, is rapidly being expanded for both domestic coverage and for coverage of West German areas bordering on East Germany.

A. Radiobroadcasting.

East Germany has one of the most progressive domestic radiobroadcasting networks in Europe. The network, centered on East Berlin, provides either AM or FM radiobroadcast coverage for all areas of the country. Each major city, as shown on the map, Figure 7,\* has either an AM or an FM radiobroadcasting station, and most cities have both types of stations.

In 1957, there were 21 domestic AM radiobroadcasting stations in operation in East Germany, 167/ as shown in Table 18.\*\* Of these, 19 used medium-frequency transmissions ranging from 520 to 1,322 kilocycles (kc), and 2 used low-frequency transmissions of 185 and 263 kc. No high-frequency transmissions are utilized in the domestic radiobroadcasting effort. The power output of transmitters employed ranges from 5 kilowatts (kw) at the Karl-Marx-Stadt (Chemnitz) station to 500 kw\*\*\* at the Berlin (Gruenau/Koepenick) station, with the majority of stations using transmitters with a power output of 20 kw.

\* Inside back cover.

\*\* Table 18 follows on p. 49.

\*\*\* Using transmitters with outputs connected in tandem.

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Table 18

Estimated Number of Radiobroadcasting Stations  
and Radiobroadcast Receivers  
in East Germany a/  
1950-57

Year	Units		
	AM Stations	FM Stations	Receivers (Million)
1950	12 <u>b/</u>	1 <u>c/</u>	3.49 <u>d/</u>
1951	17 <u>b/</u>	2 <u>e/</u>	3.81 <u>d/</u>
1952	17	3 <u>f/</u>	4.21 <u>d/</u>
1953	17 <u>b/</u>	5 <u>g/</u>	4.51 <u>d/</u>
1954	21 <u>b/</u>	9 <u>h/</u>	4.78 <u>d/</u>
1955	21 <u>f/</u>	11 <u>i/</u>	5.01 <u>d/</u>
1956	21 <u>b/</u>	13 <u>i/</u>	5.22 <u>d/</u>
1957	21 <u>b/</u>	14 <u>b/</u>	5.61 <u>j/</u>

- a. All data are rounded to three significant digits.
- b. 168/
- c. 169/
- d. 170/
- e. 171/
- f. Interpolated, using arithmetic progression.
- g. 172/
- h. 173/
- i. 174/
- j. The 1957 production of radiobroadcast receivers was planned to be 600,000, of which 210,000 were to be exported. 175/ Adding the remainder, assumed to be for domestic use, to the 1956 figure gives the 1957 figure.

FM radiobroadcasting stations, numbering 14 in 1957, transmit on frequencies ranging from 89.2 megacycles (mc) to 97.6 mc. The power output of these stations, because of line-of-sight characteristics of transmission, is low in comparison with AM stations, ranging from 3 to 10 kw. 176/

Modern equipment is employed in both AM and FM radiobroadcasting stations, and maintenance of the equipment is considered adequate. Almost all of the equipment used is manufactured domestically and is considered to be of high quality.

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Programs for domestic radiobroadcasting originate both at the central studios in East Berlin and at the studios of local stations. 177/ Programs produced in East Berlin are transmitted over wirelines to local stations for rebroadcasting. There are three national programs originating in East Berlin: Program I, "Radio DDR"; Program II, "Berliner Rundfunk"; and Program III, "Deutschlandsender." In addition, special programs are produced in East Berlin studios and relayed throughout the country. Local programs, including news, economic and agricultural information, and cultural subjects, are prepared locally, but they must be reviewed by central authorities in East Berlin before use. All programs transmitted over the domestic radiobroadcasting network are in German.

The 5.61 million radiobroadcast receivers which are estimated to have been in East Germany in 1957, as shown in Table 18,\* provide sufficient reception potential for the entire population. The majority of these receivers are confined to the reception of AM radiobroadcasts. Although the present number of FM receivers is believed to be small, the expansion of FM transmission facilities indicates that future increases in radiobroadcast receivers will be heavily oriented toward FM receivers. East Germany has the largest number of radiobroadcast receivers per person in the Sino-Soviet Bloc.

The international radiobroadcasting effort of East Germany is divided among the four high-frequency radiobroadcasting stations designed specifically for this service and those domestic radiobroadcasting stations which have sufficient power to transmit programs beyond the East German border. Three of the 4 international high-frequency stations are located in East Berlin, and 1 is located at Leipzig. The primary target of the international radiobroadcasting effort of East Germany is directed toward West Germany. As programs from most of the more powerful domestic stations can be received in West Germany, the four international stations are considered to be adequate.

B. Wire Diffusion.

The wire-diffusion network in East Germany is believed to be confined primarily to loudspeaker systems in industrial plants. Some attempts have been made since 1954 to expand this broadcasting medium to other areas of the economy, particularly to rural areas, but little progress has been evident to date. 178/ The Second Five Year Plan indicates an intention to place some emphasis on the construction of a wire-diffusion network. 179/ Construction priority for the network is unknown, but it is believed that this priority will not be high for the following two reasons:

\* - P. 49, above.

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- (1) East Germany has an extensive AM radiobroadcasting network and is expanding FM broadcasting facilities.
- (2) Television has been receiving considerable emphasis, and this emphasis is expected to continue.

The possibility of establishing an extensive wire-diffusion network, therefore, appears remote, in spite of East German plans.

C. Television.

The first East German television station began operation in December 1952 from East Berlin. 180/ As shown in Table 19, the television network by the end of 1957 had been expanded to include nine stations. These stations, shown on the map, Figure 7,\* served 125,000 television receivers.

Table 19

Estimated Number of Television Stations and Television Receivers  
in East Germany  
1952-57

<u>Year</u>	<u>Television Stations</u>	<u>Television Receivers <u>a/</u></u>	<u>Units</u>
1952	1 <u>b/</u>	N.A.	
1953	2 <u>c/</u>	N.A.	
1954	4 <u>d/</u>	2,310 <u>e/</u>	
1955	8 <u>f/</u>	13,600 <u>e/</u>	
1956	9 <u>g/</u>	70,600 <u>e/</u>	
1957	9 <u>h/</u>	125,000 <u>i/</u>	

a. All data are rounded to three significant digits.

- b. 181/
- c. 182/
- d. 183/
- e. 184/
- f. 185/
- g. 186/
- h. 187/
- i. 188/

\* Inside back cover.

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All television stations are interconnected with the main studios in East Berlin by means of microwave radio relay facilities. 189/ It is believed that the majority of the programs originate from studios in East Berlin and that individual stations have only limited facilities for local programming. 190/

In early 1957 the East German television network began the conversion of transmission standards from Soviet Bloc standards to Western European standards.\* 191/ This conversion of transmission standards enabled West German viewers to receive East German programs with no modification of receivers. East German receivers, however, required a slight modification in order to receive transmissions based on the Western European standard. In addition to the conversion, East Germany increased the power of the television transmitter in East Berlin and of the transmitters located near the borders of West Germany at Schwerin, Inselsberg, and Brocken. 192/ The primary purpose of the change in East German television transmission standards and of the increases in the power of transmitters located near the West German border appears to be propaganda penetration. Television penetration, however, is not restricted to West Germany, because East German viewers near the border can in turn receive West German programs.

Since 1 May 1957, there have been periodic exchanges of "live" television programs between Czechoslovakia and East Germany. These program exchanges are the first in the over-all plan for the interconnection of the television networks of the USSR and the European Satellites. 193/

Future television developments in East Germany most likely will be directed toward increasing the coverage of the country through the establishment of television relay stations. Long-range plans reportedly call for a total of 40 television towers for the transmission and relay of programs. 194/ Color television development appears to be in the initial stages, but hope has been expressed that a color television station will be in operation by 1960. 195/ Emphasis in the future can also be expected to be directed toward increasing the effectiveness of television penetration of West Germany through increases in the number and power of transmitters and through improvements in program content to attract larger audiences.

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\* In order to change from Soviet Bloc to Western European standards, it is only necessary to decrease the frequency spacing between the audio and video carriers from 6.5 mc to 5.5 mc.



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VI. Future Trends.

Future trends in the development and growth of the public post and telecommunications sector of the East German economy defy accurate prediction. Past performance shows an appreciable negative spread between intentions as revealed in plans and plan fulfillment as revealed in performance. Perhaps the major factor in the persistence of this spread has been the Soviet policy of suppression. Soviet influence on the direction of the East German economy, sometimes suddenly and arbitrarily exercised, has disrupted in unpredictable ways the implementation of East German plans and intentions. This factor has directly affected the interests of the Ministry of Post and Telecommunications and may be weighed against admitted and deduced deficiencies in facilities, operations, and services of the Ministry to yield some rational, though speculative, estimates of future trends.

Estimates of future trends, therefore, are based on qualitative and quantitative analysis of recent trends, on announced plans and objectives, on admitted deficiencies, and on performance. It is believed that future courses of action of the Ministry of Post and Telecommunications will be as follows:

1. It is certain that there will be an increased number of television receivers in use.
2. It is certain that there will be an increased number of radiobroadcast receivers in use capable of receiving FM broadcasts.
3. It is certain that there will be a continued enlargement of the capacity of interurban telephone and telegraph facilities.
4. It is certain that there will be a continued application of automation and mechanization to post and telecommunications processes.
5. It is certain that there will be a continued growth in TELEX service, both in use of service and in number of subscribers.
6. It is certain that there will be improved training of workers.
7. It is almost certain that there will be improved service area coverage of television transmission.

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8. It is almost certain that there will be an expansion of the FM radiobroadcasting transmission base.
9. It is almost certain that there will be a continued effort to reduce labor turnover.
10. It is probable that there will be a continued very slow rate of growth in the number of private telephone subscribers.
11. It is probable that there will be a continued effort to reduce the number of employees through elimination or absorption of jobs.
12. It is possible that there will be an increased investment in telecommunications resources if a greater portion of domestic production can be used.
13. It is possible that there will be development of the wire-diffusion broadcasting service.

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## APPENDIX A

GLOSSARY OF TECHNICAL TERMS

Amplitude modulation (AM): The process by which a selected carrier frequency is varied in magnitude (amplitude) by other frequencies that contain the information to be transmitted in telecommunications. (See Frequency modulation.)

Apparatus: Instruments, machines, appliances, and other assemblies used in providing a telecommunications facility.

Automatic (as an adjective): Of or pertaining to any process involved in producing telecommunications service which does not require direct, immediate human assistance.

Band (of frequencies): The entire range of frequencies between two numerically specified frequency limits. The magnitude of this range is a limiting factor on the amount of information that can be transmitted in telecommunications. With respect to frequencies of the radio spectrum as a whole, the International Telecommunication Union has for convenience divided the whole radio spectrum into eight major bands, as follows:

Frequency Bands		Corresponding Wave*
Range	Type	Band
30 kc** and below	Very low frequencies (VLF)	Myriametric waves
30 to 300 kc	Low frequencies (LF)	Kilometric waves
300 to 3,000 kc	Medium frequencies (MF)	Hectometric waves
3,000 to 30,000 kc	High frequencies (HF)	Decametric waves
30,000 kc to 300 mc***	Very high frequencies (VHF)	Metric waves
300 to 3,000 mc	Ultra high frequencies (UHF)	Decimetric waves****
3,000 to 30,000 mc	Super high frequencies (SHF)	Centimetric waves****
30,000 to 300,000 mc	Extremely high frequencies (EHF)	Millimetric waves****

\* Waves are undulating disturbances: a sound wave is a disturbance in the air, which is an elastic medium, and an electric wave is a disturbance in any medium whatever. The number of waves per second is the frequency of a given wave. Because the speed of wave propagation is considered to be constant, the length of a given wave is in inverse relation to its frequency: the longer the wave length, the lower the frequency, and the shorter the wave length, [footnote continued on p. 56]

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Cable: A bundle of sheathed, insulated wires and/or coaxial tubes, used as a telecommunications medium. It is sometimes referred to as "multiconductor cable."

Carrier (as an adjective): Of or pertaining to a technique for dividing a circuit, lane, supergroup, group, or channel into portions which can be used independently of and simultaneously with all other portions. Different frequencies or different pulses are selected for each portion to "carry" the information to be transmitted, after alteration by the information frequencies. The carrier itself need not be transmitted.

Channel: A portion, electrical or physical, of a telecommunications circuit, lane, supergroup, or group which can be used to transmit information independently of and simultaneously with all other portions. A channel may be used to provide two or more subchannels.

Circuit: A telecommunications connection between two or more distant points by a wire, cable, or radio medium facility used to carry information. The circuit is the fundamental telecommunications connection between distant points. By the application of appropriate techniques, a circuit may be arranged in many different combinations to meet the need for various kinds and quantities of telecommunications service. In its simplest form a circuit may carry only single telecommunications units in sequence. In its most complex form it may by apportionment carry simultaneously thousands of telephone channels and telegraph subchannels; a number of television programs; and other specialized kinds of service, such as high-fidelity broadcast programs, radar signals, and data-processing signals.

For the most complex application, a circuit is often arranged into lanes, each of which can carry, in 1 direction, 1 television program or 600 telephone channels. In turn, these 600 telephone channels are subdivided into 10 supergroups of 60 telephone channels each. Each supergroup is subdivided into 5 groups of 12 telephone channels each. One or more telephone channels may be further subdivided into three to twenty 60-word-per-minute teletype subchannels. Other specialized kinds of service may be accommodated by combining two or more telephone channels.

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the higher the frequency. Wave length is usually measured in linear units of the metric system.

\*\* Kilocycles per second, or 1,000 cycles per second.

\*\*\* Megacycles per second, or 1 million cycles per second.

\*\*\*\* It is becoming common usage to refer to waves (frequencies) in these three bands as "microwaves."

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Coaxial (as an adjective): Of or pertaining to a modern telecommunications cable medium technique using one or more tubes (sometimes called "pipes"). Each metal tube surrounds a conducting wire supported concentrically by insulators. The space in the tube usually contains nitrogen gas under pressure. Generally, coaxial cable is used for the transmission of information in complex form, such as radar, computer data, or television signals, and/or for the transmission of telephone channels and telegraph subchannels. A single tube usually carries information in only one direction at a time. The capacity of a tube depends in part upon the distance between repeater stations. In the standard facility, which may have from 2 to 8 tubes in the cable, a single tube carries a lane of 600 telephone channels or 1 television lane, for which the repeater station spacing is about 7 statute miles. In a new developmental coaxial cable facility, a single tube may carry 3 lanes of a total of 1,800 telephone channels or 3 television lanes, for which the repeater station spacing is expected to be about 3 statute miles.

Electronics: A general term used to identify that branch of electrical science and technology that treats of the behavior of electrons in vacuums, gases, or solids. Today telecommunications makes extensive use of electronic technology.

Facility: An association of apparatus, material, and electrical energy required to furnish telecommunications service.

Facsimile (as an adjective): Of or pertaining to a telecommunications (telegraph) service in which photographs, drawings, handwriting, and printed matter are transmitted for graphically recorded reception. In one method (Type A), images are built up of lines or dots of constant intensity. In another method (Type B), images are built up of lines or dots of varying intensity, sometimes referred to as "telephoto" and "photoradio."

Feeder (as an adjective): Of or pertaining to telecommunications facilities of relatively low capacity which join facilities of relatively high capacity. (See Main.)

Frequency: The rate in cycles per second at which an electric current, voltage, wave, or field alternates in amplitude and/or direction. (See Band.)

Frequency modulation (FM): The process by which a selected carrier frequency is varied in frequency by other frequencies that contain the information to be transmitted in telecommunications. (See Amplitude modulation.)

## S-E-C-R-E-T.

Functional (as an adjective): Of, pertaining to, or connected with special, unique, or particular telecommunications facilities managed and operated by a single agency, organization, company, department, committee, ministry, or other entity, in contrast to the facilities of a basic system. (See Basic system.)

Group: A number of channels (usually 12) or subchannels combined (multiplexed) electrically in building up the total capacity of a telecommunications circuit, lane, or supergroup.

Ionosphere: Those layers of the earth's atmosphere occupying the space about 210 statute miles in thickness extending from about 30 statute miles above the earth's surface to the outer reaches (exosphere) of the atmosphere. Reflection from these layers makes possible long-distance transmission of radio signals. The layers, however, are responsible for fading of signals, skip distance, and differences between daytime and nighttime radio reception. They are also used as a scattering reflector for ionosphere scatter-transmission techniques to transmit to distances of about 1,000 to 1,500 statute miles.

Joint facility: A telecommunications facility owned, controlled, or operated by two or more agencies, organizations, companies, departments, committees, ministries, or other entities.

Lane: A 1-way portion, electrical or physical, of a 2-way telecommunications circuit which can be used independently of and simultaneously with all other portions. The largest lane today can handle 600 telephone channels or 1 television program. In some applications the direction of a lane may be reversed.

Leased (as an adjective): Of or pertaining to the direct operation by a user of a telecommunications facility owned by another agency.

Line: A general term used to delineate a telecommunications circuit facility (wire, cable, or radio).

Main (as an adjective): Of or pertaining to telecommunications facilities at and between principal cities and centers which have relatively high capacity compared with feeder facilities. (See Feeder.)

Medium: Any substance or space that can be used practically to transmit a form of electrical energy for the purpose of providing telecommunications service.

Microwave radio relay (as an adjective): Of or pertaining to a radio medium technique in modern telecommunications employing radio

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frequencies higher than 300 mc. These frequencies do not normally afford practical direct transmission to great distances, principally because they do not bend well around the earth's surface and because they do not reflect well from the ionosphere. They are, however, capable of reliable transmission from horizon to horizon (line-of-sight) by the use of special antennas which concentrate the radio energy and give it desired direction. Great distances can, in consequence, be reached by this technique by the interposition of relay stations along the route of the line with a spacing interval of from 25 to 40 statute miles, depending upon terrain conditions. This technique can be employed practically to carry from a small number of telephone channels and telegraph subchannels to thousands of such channels and subchannels through 2 or more lanes and to carry 1 or more television and other specialized lanes and channels. (See Band.)

Mobile (as an adjective): Of or pertaining to a telecommunications facility which is intended to be operational while in motion or during halts at unspecified points. (See Portable.)

Modulation: The process of altering a carrier frequency or carrier pulses by other frequencies or pulses representing the information being transmitted.

Multiplex (as an adjective): Of or pertaining to the combining of information signals, modulated or unmodulated, of two or more lanes, supergroups, groups, channels, or subchannels for transmission over the same circuit.

Network: An interconnection, electrical or physical, of two or more circuits or portions thereof for the purpose of facilitating telecommunications service.

Point-to-point (as an adjective): Generally, of or pertaining to telecommunications service between fixed points, using the radio medium.

Portable (as an adjective): Of or pertaining to a telecommunications facility which can be readily moved from place to place but is not normally operational while in motion. (See Mobile.)

Private (as an adjective): Belonging to or concerning an individual person, organization, institution, or activity; not public or common.

Pulse: A spurt of electrical energy of extremely short duration (usually measured in millionths of a second), yet capable of being used in telecommunications to transmit information.

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Quad: In a multiconductor telecommunications cable, the physical association of a group of 4 conductors in any one of various arrangements for the purpose of providing 2-way multichannel operation.

Reception base: The aggregate telecommunications receiving facilities employed in providing a broadcast service.

Route: The geographical path followed by a wire, cable, or radio line.

Scatter (as an adjective): Of or pertaining to a radio medium technique in modern telecommunications by which energy in radio frequencies above 30 mc is deliberately scattered into one or the other of two reflecting portions of the atmosphere (troposphere and ionosphere) at a predetermined angle such that a usable portion of the energy arrives at the desired receiving location. This technique is especially applicable to regions in high latitudes (Arctic and Antarctic) where facilities of other media suffer from the rigors of weather and terrain and where the conventional long-distance radio media of the lower frequency bands (200 kc to 30 mc) are subject to serious disruptive propagational anomalies. (See Band.)

Subchannel: A portion, electrical or physical, of a telecommunications channel which can be used independently of and simultaneously with all other portions. An appreciable number of telephone channels can usually be subchanneled to carry from three to twenty 60-word-per-minute teletype subchannels on each telephone channel so employed.

Subscriber: Any customer who directly operates telecommunications apparatus in obtaining telecommunications service.

Supergroup: A number of groups (often five) combined (multiplexed) electrically in building up the total capacity of a telecommunications circuit or lane.

System: All of the facilities and networks managed by a single agency, organization, company, department, committee, ministry, or other entity in rendering either functional or basic telecommunications service.

Telecommunications: Transmission, reception, or exchange of information between distant points by electrical energy over a wire, cable, or radio medium facility to produce telephone, telegraph, facsimile, broadcast (aural and visual), and other similar services.



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Teletype (as an adjective): Of or pertaining to a technique for effecting telegraph service by the use of an apparatus similar to a typewriter in which information is transmitted by keyboard and received by type printer on a roll of paper, on a roll of tape, or by perforations on a roll of tape, or both. (Sometimes called a "teleprinter" or "teletypewriter.")

Transmission base: The aggregate telecommunications transmitting facilities employed in providing broadcast service.

Transistor: A modern device which is capable of performing in a solid (germanium or silicon) many of the functions performed by the conventional electronic tube in a gas or vacuum.

Troposphere: The layer of the earth's atmosphere occupying the space from the earth's surface to a height of about 6 statute miles. This layer is used as a scattering reflector for tropospheric scatter transmission techniques to distances of about 200 to 500 statute miles.

Wave guide (as an adjective): Of or pertaining to a telecommunications medium, now under development in several countries, which may be capable of transmitting extremely large amounts of conventional and complex information. It consists of a circular or rectangular hollow metallic tube in which electrical energy travels in the form of waves, much as do sound waves in a speaking tube.

Wire diffusion: Distribution of broadcast programs by a wire or cable medium to wired loudspeakers.

Wired loudspeakers: A telecommunications loudspeaker which receives from a distribution point one or more broadcast programs by a wire or cable medium.

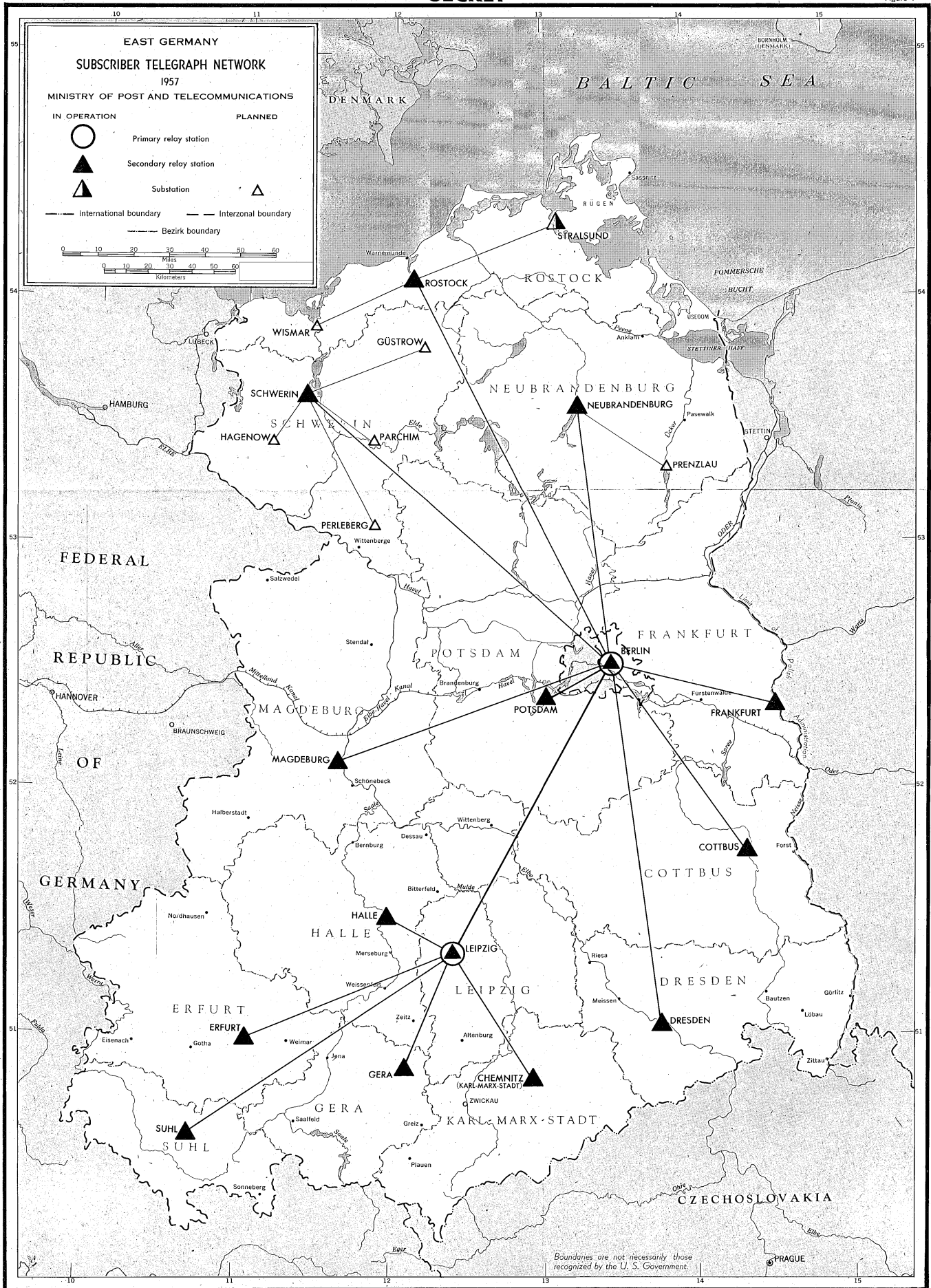
Wireline: A general term used to identify a line consisting of either an aerial cable (and/or separate wires) or underground cable, used as a telecommunications medium.

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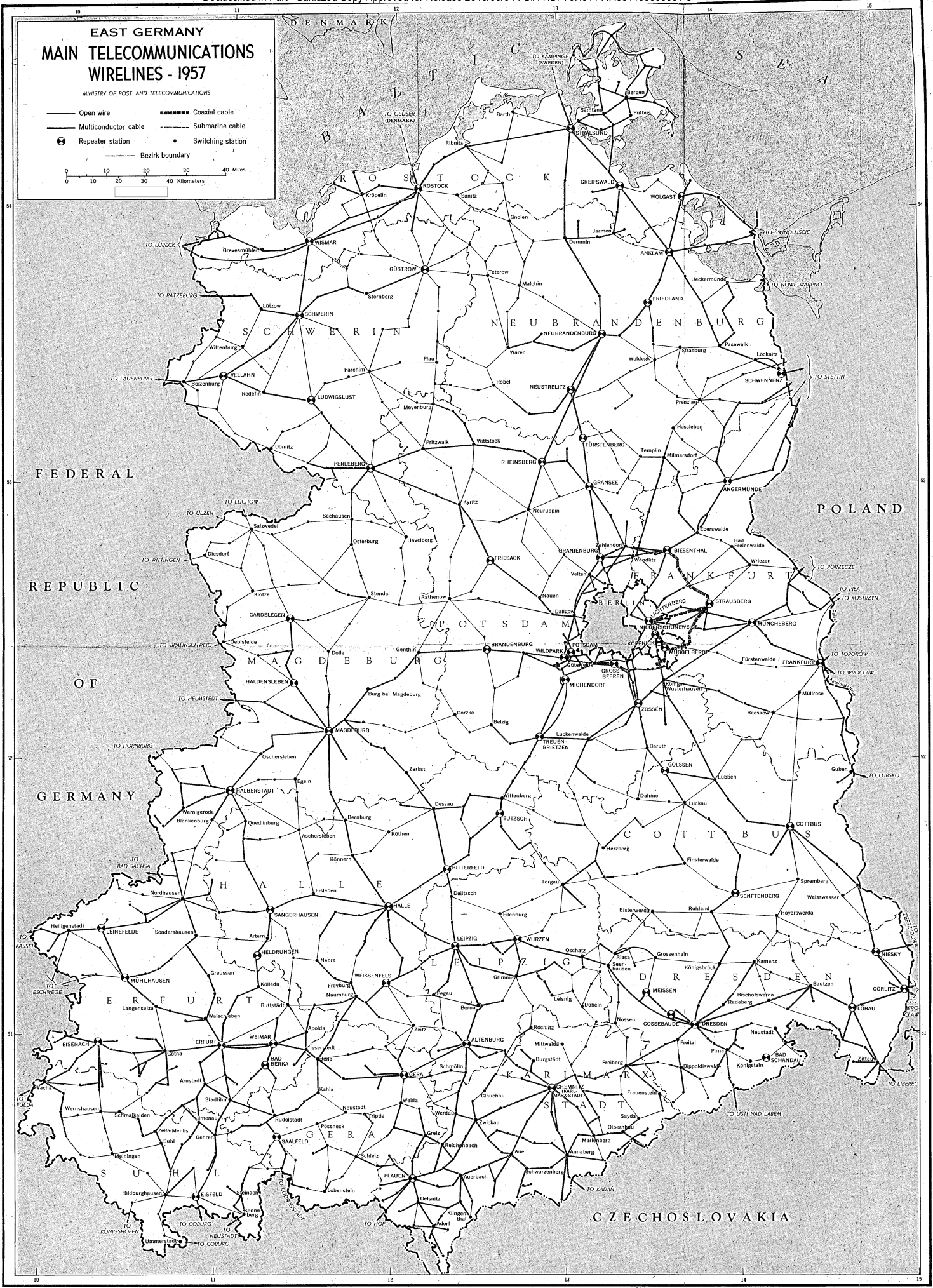
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Figure 4



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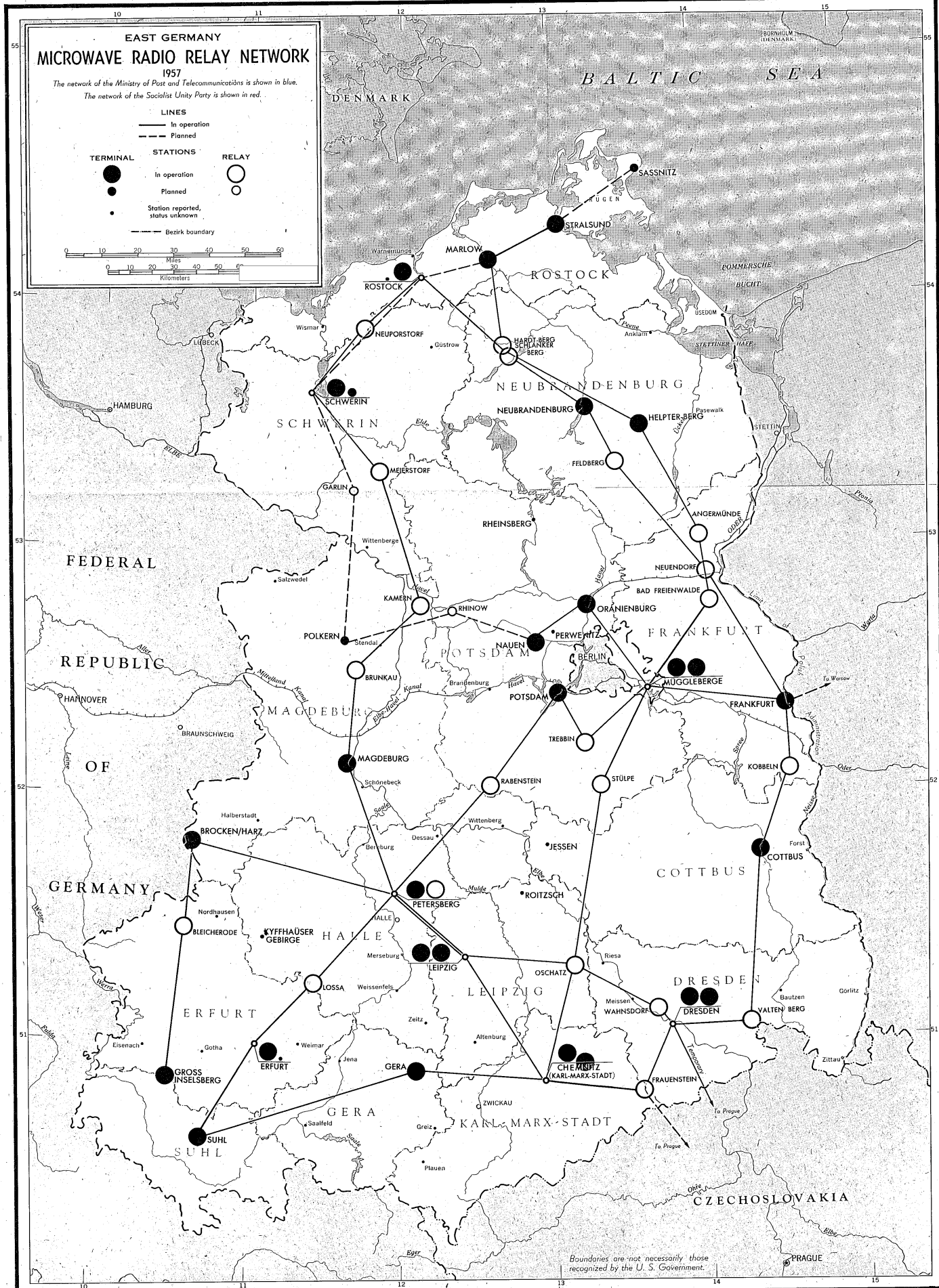
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Figure 7

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